

**GEOTRACES INTERNATIONAL SSC MEETING  
STELLENBOSCH, SOUTH AFRICA  
8 – 10 OCTOBER 2014**

**List of attendees**

SSC Members:

Ed Boyle (co-chair)

Reiner Schlitzer (co-chair)

Andrew Bowie

Pinghe Cai

Jordi Garcia-Orellana

Vanessa Hatje

Tung-Yuan Ho

Phoebe Lam

Maeve Lohan

Maite Maldonado

Olivier Marchal

Katharina Pahnke

Micha J.A. Rijkenberg

Alakendra N. Roychoudhury

Geraldine Sarthou

Yoshiki Sohrin

David Turner

Bob Anderson (Past SSC co-chair)

Laurent Bopp (Data Management Committee member; attended the first day only)

Greg Cutter (Standards and Intercalibration Committee co-chair)

Gideon Henderson (Past SSC co-chair)

Catherine Jeandel (IPO science director)

Elena Masferrer (IPO executive officer)

Ed Mawji (GEOTRACES data manager)

Alessandro Tagliabue (Data Management Committee member)

Ed Urban (SCOR)

Jing Zhang (Past SSC member and Data Management Committee member)

WEDNESDAY 8 OCTOBER 2014

### **Opening remarks**

Alakendra Roychoudhury (Roy), host of the meeting, welcomed all SSC members and provided logistical information.

Prof. Louise Warnich, dean of Faculty of Science of the Stellenbosch University welcomed all participants and made a presentation of the Faculty of Science. She also reviewed the history of chemical oceanography in South Africa and the establishment of the first clean laboratory in Africa.

Reiner Schlitzer and Ed Boyle, SSC co-chairs, thanked Roy and Prof. Warnich for hosting the meeting. They welcomed all participants, especially Vanessa Hatje, new SSC member.

### **National Reports**

#### **Australia – Andy Bowie**

Andy started the presentation listing the meetings attended by Australian GEOTRACES researchers. He then reviewed future plans for cruises: there has been a 1-year delay for cruise to Heard/McDonald Islands under the project “Heard/McDonald Islands submarine hydrothermalism and biospheric Impacts”. This will be a 60 day cruise in 2015/16. Andy plans to submit it as future GEOTRACES Process Study. Another possibility is SR3 re-occupation in 2016/17 or 2017/18 seasons (funding pending). Moreover, Australian scientists have submitted 3 ship-time proposals for possible GEOTRACES Process Studies in the Southern Ocean and Tasman Sea in 2016-17 seasons.

Then, he presented scientific results. There have been 9 journal articles reporting GEOTRACES activities. Results from the French led KEOPS-2 are being published in *Biogeoscience*; results from SIPEX-2 are being published in *Deep-Sea Research II* special issue and results from PINTS will be also published.

The new ship *RV Investigator* arrived in Hobart in September 2014. It includes sampling equipment, lab clean container, trace metal rosette, in situ pumps and aerosols sampling facilities.

#### **New Zealand – Andy Bowie on behalf of Rob Middag**

Andy described the list of meetings attended. He then summarized the status of the cruise samples analysis: for GP13 (leg2) most data analysis is completed; for FeCycle II GEOTRACES process study analysis are close to completion with most papers published; and for FeCycle III GEOTRACES process study, sample analysis is close to completion with publications planned. In addition, New Zealand scientists participated in the 3 legs of the Dutch GEOTRACES cruises in the Mediterranean and Black Sea.

### **South Africa** – Alakendra Roychoudhury (Roy)

Roy started the presentation showing some pictures of the new Class-10 trace clean laboratory at Stellenbosch University, which is now functional. They are still experiencing some contamination problems with sampling system. Roy explained that South African scientists participated in the SANAE53 cruise to the Southern Ocean on the BONUS-GOODHOPE line and that they re-occupied a crossover station. They are not sure if higher Fe at 1500-3500m is contamination or a hydrothermal plume. He then described some scientific results, e.g. about particles analyses (with one paper just published). As far as funding, they got 2 NRF proposals funded in the past year and they have submitted 5 more this year. Roy attended the IIOE-2 workshop for the East African regions in Mauritius funded by SCOR.

#### Questions:

Gideon Henderson – He asked whether a letter of support to NRF from SSC or SCOR would help in accessing to the ship. Roy answered that he tried to have a representative from funding agencies attend the SSC meeting but the invitation was finally declined. An approach from SCOR or SSC co-chairs would definitively help.

**Action:** SCOR and SSC co-chairs to write letter of support to NRF complimenting them on the wonderful ship and showing how valuable it would be to have more access for science.

Alessandro Tagliabue – He asked whether there were any international training opportunities that Roy could take advantage of through SCOR? Roy explained that he would be very interested in applying for a SCOR Visiting Scholars Grant for someone to visit him to teach.

### **Brazil** – Vanessa Hatje (on behalf of Angela Wagener)

Vanessa reported about Brazilian activities only since no information is available from other Latin American countries.

Vanessa explained that a new clean sampling system would be installed on *RV Atlantico Sul*, with cruises held on January, July and November 2014. The parameters that will be measured are: nutrients, Fe; POC, PN, 234Th, 238U, 223-224-226-288Ra, 222Rn. They have a new postdoc (Leonardo Pereira) to work on Fe who participated in the GA01 French GEOVIDE cruise. She added that L.C. da Cunha is the new SOLAS representative.

Angela Wagener has collaboration on-going with Ed Boyle at MIT on the project “Tracking the historical development of combustion practices using molecular and isotopic markers in shelf sediments of SE Brazil”. Vanessa worked in Ken Bruland’s lab in the past years on a new method for determining REEs in seawater.

She, then, described capacity building activities: A joint (Brazil, Colombia, Argentina and Venezuela) proposal was submitted to the IAEA with title “Strengthening regional Latin America capabilities for applying trace elements and isotopes in coastal management studies”. In addition, new clean laboratory facilities are being built at Federal University of Bahia.

#### Question:

Gideon – He asked whether they are planning intercalibration procedures to accompany Fe work and whether someone of the SSC could help. Vanessa explained that Felipe Niencheski will go to Brest in the coming month so Geraldine Sarthou will help. Greg Cutter has also been working with Felipe.

## **Canada** – Maite Maldonado

Maite started the presentation explaining that together with K. Orians and R. François, they have participated in the intercalibration particle effort. They have also undertaken 2 cruises of Line-P process study (in September 2013 and 2014).

She then described the GEOTRACES\_CCAR project, which will have two cruises in the Arctic. A GEOTRACES Canada Modeling meeting has been held with Susan Allen leading the effort. In addition, two cruise planning meetings have been held. She showed the map of the tentative cruise track. They have already arranged a cross over station with the French GEOVIDE cruise in the Labrador Sea (55.842°N/48.093°W) and there will be another with US in the Canada basin. There will be 2 cruises aboard *RV Amundsen*, of 9 weeks in total. The first one, a Labrador Sea – Canadian Arctic Archipelago cruise (in collaboration with Arctic Net Program) will be held from July 2 to Aug 13, 2015. The second one, in the Canada Basin (in collaboration with DFO C3O), will sail from Sept 8 to Sept 24, 2015. All key TEIs will be measured.

She finally presented some recent highlights from Canadian research, as for example, a recent paper from Jay Cullen that suggests that Cd and Zn cycle are sensitive to oxygen depletion.

## **China** – Pinghe Cai

Pinghe reported that there is a new ship being built (*RV Beiqing*) but that the cost has increased and they need to find extra funding. The ship will be available in 2016. Chris Measures is helping on the clean sampling system.

He then presented the activities on capacity building including intercalibration exercises. Cai presented some results including: deep water inflow in the Lozon Strait; a quantitative understanding of the behaviour of Mn in the estuary based on the measurements of  $^{224}\text{Ra}/^{228}\text{Th}$  disequilibrium in bottom sediments.

Pinghe reported that China GEOTRACES would like to hold a GEOTRACES process study cruise in 2015. He also explained that there is a funding source from China Science Council to support PhD students and PIs to be trained in US and Europe.

Question:

Catherine Jeandel – She asked about the intercalibration results. Pinghe answered that they have participated in the AI intercalibration exercises, and report is good.

## **France** – Geraldine Sarthou

Geraldine started her presentation describing the French cruise activities. Some researchers participated at the Dutch MedBlack cruise (GA04N). But the big effort this year was to lead the GEOVIDE cruise (GA01) that involved the participation of 18 laboratories from 9 countries (7 French laboratories). They undertook a full depth resolution section (47 days at sea), with 47 short stations, 17 large stations, 5 Xlarge stations, 10 super stations and 1 crossover station.

She thanked Greg Cutter for his help in setting the clean sampling system and equipment. She also thanked Phoebe Lam for lending them the in-situ pumps and Bob Anderson for the sediment corer.

She presented some preliminary findings from the cruise: (1) the subarctic front was found much further to the south than normal; (2) The central Irminger Sea was recently ventilated down to 1000m; (3) The thickest layer of recent Labrador Sea Water was found at station 69; (4) They measured more than 1500 Hg species and found that the recent atmospheric Hg deposition is lower than during the previous decades. So, they anticipate a decrease on Hg content of the NA pelagic ecosystems, including commercial species.

She ended by presenting activities from French GEOTRACES researchers in international meetings and recent publications (18).

Question:

Reiner – He cautioned that because of deep ventilation the Labrador Sea crossover station with Canada might not be a good one.

### **Germany – Katharina Phanke**

Katharina explained that Germany hosted the SSC and DMC meeting last year. In addition two Arctic cruise planning meetings were held.

She then showed the cruise track for future Arctic Cruises (*R/V Polastern*). Chief scientists of these cruises are Michiel Rutgers van der Loeff, Katharina Pahnke, Micha Rijkenberg, Hein de Baar, Pere Masque and Per Andersson. They are still awaiting permission to enter in Russian waters. If clearance is not granted they will extend the cruise track into the central Arctic. Katharine sought SSC approval for these cruises to be GEOTRACES sections.

Reiner – He suggested to review the cruises later on the agenda, once the GEOTRACES cruise criteria document is reviewed and approved.

Katharine continued by showing the cruise track for the forthcoming German South East Atlantic cruise (off Namibia) along GI08 section. Funding for this cruise is now approved. Chief scientists will be Martin Frank, Eric Achterberg and Andrea Koschinsky. The cruise will be held late 2015.

She explained that a trace metal-clean winch (Lebus/Southampton) will be delivered to Geomar (Kiel) in November.

She presented results from her process study and reviewed and latest publications (8 published, 2 submitted, 10 abstracts). She noticed that a very important contribution from Germany this year was Reiner Schlitzer's work on the eGEOTRACES Electronic Atlas.

Question:

Gideon – He asked about the plans for GI08 cruise intercalibration. Katharina explained that it cross CoFeMUG process study so a crossover could be done. Other possibilities are to collect duplicate samples.

### **Japan – Yoshiki Sohrin**

Yoshiki started his presentation describing the GEOTRACES meetings held last year. Japanese GEOTRACES organized a GEOTRACES special session at 2014 Asia Oceania Geosciences Society Annual Meeting (AOGS2014). Reiner Schlitzer was invited speaker in this session. They also organized two national meetings: one at AORI Symposium (University of Tokyo) and another one at the annual meeting of Geochemical Society of Japan (GSJ) in Toyama.

He then reviewed the Japanese cruise plans. The KH-14-6 cruise along section GP18 (170°W) in the South Pacific is scheduled for 2 Dec 2014-26 Feb 2015 with chief scientist Toshitaka Gamo. Jing Zhang plans a process study for November 2015 in East China Sea (cruise KH-15-4). Finally, future plans (2016/2018) includes a cruise on the Eastern North Pacific, to complete section GP08 (47°N, PI: H. Obata) and a cruise on the Western North Pacific, process study (PI: J. Zhang). As far as KH-14-6, spacing is at 5 degree and a crossover is planned with Australian cruises.

He presented the publications (27) and some results already published papers including: Helium anomalies suggest a fluid pathway from mantle to trench during the 2011 Tohoku-Oki earthquake (Sano, Y. et al., 2014); Quantitative evaluation of iron transport processes in the Sea of Okhotsk (Nishioka, J. et al., 2014); Southward spreading of the Fukushima-derived radiocesium across the Kuroshio Extension in the North Pacific (Kumamoto, Y. et al., 2014).

As far as funding, Yoshiki explained that they have a grant (2011-2015) from the Japan Society for the Promotion of Science covering traveling and GEOTRACES studies.

Questions:

Catherine – She noted that the IPO was not aware of the publications described. She invited the Japanese community and everyone to send the list of GEOTRACES publications to the IPO.

Catherine – She asked clarification about station spacing. Yoshiki explained that small volume stations will be every 5 degrees but large volume stations will be spaced every 10 degrees.

Gideon – He urged to collect as many large volume samples as possible at 5 degree spacing. He proposed re-scheduling the cruise, this is, the southward leg to be shortened to get higher resolution on the GP18 line. Jing responded that unfortunately the plan is already fixed and cannot be modified at this stage.

Catherine – She asked about particulate sampling. Jing answered that there will not be in-situ pumps.

Phoebe – She proposed another nation to loan a rosette to collect large volume samples more rapidly. Several SSC members discussed this issue.

Reiner – He concluded that it might be late for this cruise, but encourage Japanese colleagues to consider in future cruises to have high resolution for all parameters and this could include asking collaboration from other nations.

**India** – Bob Anderson presenting on behalf of Sunil Kumar Singh

Bob showed the cruise tracks of SK 311 and 312 Indian cruises conducted in 2014. Then, he presented some Indian scientific highlights that included: Mo isotopes in the Indian Rivers and Oceans; Dissolved silicon and its isotopes in the water column of the Bay of Bengal; Internal cycling versus lateral transport; and Submarine groundwater studies.

The presentation was concluded by presenting a list of recent Indian GEOTRACES publications (5).

Questions:

Gideon - He asked about the parameters measured during the cruises in 2014 and the intercalibration process for these cruises. Bob explained that there is no concrete information about this in Sunil's presentation. Maeve explained that there was the plan to take duplicates.

### **Netherlands** – Micha Rijkenberg

Micha explained that the work in the past year has focused on the preparation of the *Polastern* cruise TransARC II. As they do not know if they will have permission from Russia to enter in EEZ waters, they are working in two possible cruise tracks (one if clearance is granted and an alternative one in case it is not granted). They are still looking for additional funding.

He informed that there is a cruise opportunity (DustTraffic) from Patrick Laan to sample trace elements crossing the Atlantic Ocean.

He finally presented some preliminary results from the Mediterranean and Black Sea cruise that included: dissolved aluminium (dAl) in the Mediterranean Sea (there is as strong west to east gradient in dAl concentrations in the surface waters due to mixing of inflowing Atlantic water with Mediterranean water and, also a strong east to west gradient also at depth); A comparison of the West Atlantic Ocean dissolved iron (dFe) versus Mediterranean dissolved iron profile (Mediterranean profile looks like scavenged-type profile); Organic Fe-binding ligands in the Mediterranean Sea; Trace metals in the Black Sea; Methyl mercury (MeHg) in the Black Sea (results shows that there is MeHg in the anoxic part of the Black Sea); DFe in Ryder Bay, Rothera.

He ended the presentation by showing results from the Hg intercalibration. He also announced that they are discussing the possibility of preparing a special issue about MedBlack cruise results.

### **Russia** – Ed Boyle presenting on behalf of Ludmila Demina

The presentation described the main Russian activities in the past year. Russian scientists participated in 14 conferences, where they have done more than 350 presentations. They have undertaken 8 cruises. New funding has been granted for 15 projects related to GEOTRACES, including 2 initiative projects. All those projects are funded by the recently reorganized Russian Scientific Foundation (rscf.ru). Among the aims of some projects, the Arctic expedition (including the Barents and Kara Seas) is laid out for 2015. Some results about Russian research were also presented. Boyle ended the presentation by describing the main Russian science highlights and publications (20).

### **Spain** – Jordi Garcia-Orellana

Jordi explained that in the past year he worked on expanding the Spanish Committee having contacts with scientists in Canarias (J. M. Santana-Casiano and M. González-Dávila from ULPGC) and exploring possibilities of collaboration with L.M. Laglera (UIB) from Mallorca. His group has also started new collaboration projects with several labs in South America. They are collaborating with ETH-Zurich on U-236 studies with number of samples from the Arctic, Southern Ocean, Atlantic, Mediterranean and Pacific. They have been participating in GP16 and GA01 cruises and they will participate in the *Polastern* cruise in the Arctic. Some cruises to examine Fukushima radionuclides will also be held through a recent EU funded project. The Spanish funding situation is slowly improving with a few calls opened in the past year. He then presented the papers published (19) and thesis (1). He finally presented preliminary results from the MedSea cruise and from Valentí Rodellas' thesis. He concluded pointing the defined interests and potential.

## **Sweden – David Turner**

David confirmed that the *RV Oden* wouldn't be available to undertake the Arctic expedition due to lack of funding. Per Anderson has secured a place on board *RV Polastern*. The proposal for SCOR Working Group MARCHEMSPEC has been approved as WG145. He finally presented some results from the GEOTRACES Baltic process study (Oceania).

## **Taiwan – Tung-Yuan Ho**

Tung-Yuan explained that the second GEOTRACES Taiwanese cruise was successfully completed (March-April 2014) along the same line as the previous cruise to study seasonal variation. 11 laboratories participated at the cruise (7 local, 3 international collaborations). He also presented some preliminary results from this cruise.

He announced that the Taiwan Ocean Research Institute (TORI) which manages the new *RV OR/5*, has agreed to allocate 1 million USD to purchase a full set of trace metal clean sampling system, including Kevlar wire (8K m), trace metal clean winch, and sampling rosette and bottles.

He followed by describing international collaborations: 6 Chinese students (Xiamen University) joined the Taiwanese cruise and 2 Taiwanese members joined the Japanese KH-11-7 cruise led by Jing Zhang. Future cruise plans include: at least two more GEOTRACES cruises in 2015 and 2016 (funding already granted in advance) and a third GEOTRACES cruise to be held in July 20-31, 2015. Tung Yuan ended his presentation thanking the SSC for the help received

Question:

Gideon – He proposed Taiwan to occupy GEOTRACES sections such as for example, GP08 or GP09.

Maeve – She requested Taiwanese data to be sent to the S&I Committee.

## **USA – Bob Anderson**

Bob presented the major events of the past year ordered per basin. In the Atlantic, following the GA03 cruise, 23 manuscripts are to be published in DSR-II issue, hoping for 2014 publication date. In the Pacific, the GP16 cruise was successfully completed. In the Arctic, the management proposal is funded but the icebreaker *USCGC Healy* will have to be shared with CLIVAR. They plan to hold a cruise logistical meeting in January 2015. Bob detailed that 20 individual proposals have been funded for Arctic expedition and several others are currently under review. He concluded this part of the presentation by explaining that the US SSC met on 23-24 June to set priorities for rest of decade. He followed by presenting preliminary results from GP16 including: (1) 4000-km extent of TEI plume; (2) Elevated concentrations of Fe extend further from the source than for Mn, both with respect to margin sediments and the hydrothermal plume. Something is apparently stabilizing Fe with respect to loss by scavenging; (3) Excess Fe scales linearly with  $^3\text{He}$  over a large extent of the plume, supporting the view that some factor is stabilizing Fe; and (4) No dissolved sulfide was detected in the oxygen minimum zone.

He presented the cruise track for Arctic cruise in 2015 and the plans for the future. The US has approved the following cruises (contingent on funding):

2018: Alaska - Tahiti (GP15)

2020: Tahiti - Antarctica (GP17)

He concluded by showing the list of publications (16).

**UK – Maeve Lohan**

She started presenting information about past (4) and future meetings (1); publications (16); and PhD completions (3) and submitted (3). She explained that the cruise Shelf Sea (GEOTRACES process study) was put back to November and that UK scientists have participated in the French GEOVIDE (GA01) cruise. She followed with funding information: unfortunately, the Arctic cruise proposal has not been selected for funding; Maeve and Alessandro have submitted a proposal but they are waiting for results; Gideon got funding from the Royal Society to held the GEOTRACES synthesis meeting (Biological and climatic impacts of ocean trace element chemistry) on 7-10 December 2015; and, they have submitted an Indian Ocean IIEO2 proposal to SPAG (strategic program advisory group) outline. She announced that the government has made operational a new polar ice-strengthened ship for 2019, and they are optimistic about the possibility to have a cruise in the Arctic in 2019. She presented some results on Pb in the tropical Atlantic. She finalized the presentation showing the list of papers published or submitted in the past year.

**Afternoon:**

### **International Partnership Issues**

**SCOR WG 139 - Organic Ligands-A key control on trace metal biogeochemistry in the ocean – Maeve Lohan**

Maeve started the presentation describing the goals and membership. A special issue has been submitted in Marine Chemistry (32 papers submitted; 7 in press so far). Data and products (3) from the intercalibration exercise are available on the working group web site. There will be a final workshop symposium in Sibenik Croatia on Tuesday 7 to 11 April 2015. There will be funding from SCOR for developing country participants, so Maeve thanked Ed Urban for this. The workshop will include a training workshop (8th April) for early career participants. The new WG MARCHEMSPC will run back-to-back with ligand workshop.

**SCOR WG 145- Chemical Speciation Modelling in Seawater to meet 21<sup>st</sup> Century Needs (MARCHEMSPC) – David Turner**

SCOR has recently announced the approval of this working group. David presented the background for the working group: there was a clear need to develop an approach, similar to the equation of state for seawater, to calculation of chemical speciation for the CO<sub>2</sub> system, trace metals, pH buffers, etc. He presented the terms of reference. The WG will run for 4 years. The last year will be dedicated to implementing a web-based tool for chemical speciation calculations, which is the ultimate goal of the working group. He presented the full members. SCOR has requested them to broaden the associate membership to include more geographical and gender diversity. They aim to have a strong connection with WG139 and with GEOTRACES in general.

## **Report on two GEOTRACES-related proposals for new SCOR working groups – Ed Urban**

Ed Urban explained that SCOR received eight proposals for working group and that this year SCOR decided to approve three instead of two proposals. There were two GEOTRACES-related proposals approved. In addition to MARCHEMSPEC, there is the working group on Radioactivity in the Ocean, Five Decades Later (RIO5). The group will combine and build upon existing global and individual databases of natural and artificial radionuclide distributions to make an user friendly and easily accessible on line product. It will also summarize and publish review papers on these global radionuclide datasets and provide examples of how these can help improve our understanding of ocean processes and contaminant fate and transport. There are several GEOTRACES researchers involved. Co-chairs are Minhan Dai and Ken Buesseler. Reiner Schlitzer is an associated member in this proposal.

## **SCOR developments and Future Earth – Ed Urban**

Future Earth (FE) has announced a consortium to host the Future Earth (FE) secretariat. It is expected to be in place and operation in early 2015. SOLAS and IMBER have continued to engage with FE in preparation for potential co-sponsorship. SCOR has signed a letter of agreement with FE related to these 2 projects. FE has not specified how much support it will provide to the projects, except that it intends to provide about the same as IGBP provides to existing projects (about US 20000 per year). The FE implementation plan is for 10 years.

Question:

Elena – She noted that Future Earth is connected to Belmont Forum-IGFA Council of Principals. Last call for proposals from this forum was really Future Earth oriented.

## **Capacity Building – Ed Urban**

Ed Urban explained that in the past year there have been two travel support requests: one from Noureddine Zaaboub (Tunisia) to work with François Le Loch in France and a second from Julian Betancourt (Colombia) to work with Jordi Garcia-Orellana. Urban needed to check with the SSC on the status of the requests and the hosting arrangements. He reminded the SSC that SCOR has funding available each year for GEOTRACES to be used for these types of opportunities.

## **BioGEOTRACES – Maite Maldonado**

Maite, first, reviewed the news received from the three original laboratories participating in BioGEOTRACES:

\*Chrisholm Lab: It has funding for metagenomic sequencing on all the GEOTRACES samples. They hope to finish by the end of 2014.

\*LaRoche Lab: It is going to do data analysis and they have a publication in the US DSR-II special issue of US Atlantic GEOTRACES. Participated in the GEOVIDE.

\*Herndl Lab: No answer received in the past three years.

She proceeded by presenting the inventory of GEOTRACES cruises with BioGEOTRACES activities. Maite is updating this Excel file annually. Scientists are becoming more cooperative about contributing information. The file tracks who collects samples as well as who analyzed them.

She explained that she co-organized a BioGEOTRACES session at Goldschmidt 2014 and planning another one for ASLO 2015.

Maite went through the action items from last year. Action items concerning reviewing the web site were completed. She showed the revised BioGEOTRACES site.

She followed by showing some LaRoche data from GA03.

Another action item from last year was to set a system to allow for searches. She showed a proposal for an interactive map for BioGEOTRACES activities. These are desired action item to be done in the future.

One thing that needs to be done is to update the list of “parameters” on the GEOTRACES web site (at the bottom). Penny Chrisholm and Julie LaRoche have agreed to produce a revised version of basic parameters to help reduce sample needs (sample size).

Maite has identified possible national BioGEOTRACES representatives. Her aim is to set up network of persons worldwide to help coordinate the effort. She also would like some help identifying representatives for other countries (Taiwan, China, Germany, India, Netherlands and Sweden). Maite will approach SSC members in the coming days to get a name.

Questions:

Reiner - Is there any BioGEOTRACES data submitted? Not yet. Maite explained that there was a misunderstanding; some laboratories thought GEOTRACES did not want their data.

Gideon - He reminded that GEOTRACES is interested in having a list of high priority parameters. Maite explained that a list was defined last SSC but that later discussions with the Executive Committee suggested that it is better to leave the list open.

**Action:** Maite to draft an e-mail, to be reviewed by the SSC, encouraging submission of BioGEOTRACES data to GDAC. In the e-mail Maite will emphasize simple datasets.

### **International Project Office** – Elena Masferrer and Catherine Jeandel

Elena started her presentation by listing the main tasks of the IPO and all the products developed and available. Last year was a very special and busy year due to the release of the IDP2014. She described all the tasks related to the IDP2014 in which the IPO has been involved. These included:

(1) development of the IDP reference list: The IPO worked hard to find a solution to create it. It required the development of software to convert XML to HTML. The IPO benefited from the help of technicians from SEDOO in Toulouse that did it for free. Another hard task was then to include this into Joomla.

(2) The IPO undertook several logistical tasks related to the IDP (including the organization of the Town Hall at Ocean Science and assisting in the coordination of the SCOR Booth).

(3) An important task was communication of the IDP2014 release. The IPO developed materials (such as: brochure, banner, etc.) and distributed announcements to main stakeholders in each country.

She followed with other tasks completed such as, the maintenance of the web site (with 3 upgrades done in the past year). A major upgrade will have to be done next year. New functionalities of the site include an archive of the science highlights (56 to date). Elena thanked SSC members that are helping to have the website upgraded by sending publications, meeting information, jobs, etc. She invited all SSC members to contribute materials. She then reviewed the statistics, visits and users continue to growth. Facebook presence is growing as well.

So far two Educational and Outreach web pages exist. One for SSC members access only and another public. Elena urged SSC members to send outreach and educational materials.

**Action:** SSC members to send any outreach and education materials to the IPO to be posted on the site.

So far 9 GEOTRACES eNewsletters have been published (about 40% of e-mails opened). The publication database has doubled in size in the past year (up to 482 publications). Papers were only included in the database if they have included GEOTRACES in abstract, title or keywords.

Discussion:

Ed Urban – He thanked Elena on behalf of all projects for setting up the SCOR Booth at Ocean Sciences.

Discussion about do we need to enlarge science highlights recipients? Who is the target audience?

Olivier – He asked whether it is a matter of expanding the audience or whether we need to inform better the existing audience.

Bob Anderson – He spoke in favour to enlarge the recipients and especially to other communities but within the ocean science, e.g. biologist and paleoceanographers.

Catherine explained that during the DMC it was decided to use the IDP in summer schools.

Ed Urban – He informed meeting participants that he had already contacted SOLAS to ask if a presentation about GEOTRACES would be possible. Keynote presentations are already selected, but SOLAS welcomed GEOTRACES to submit an abstract to the SOLAS Open Conference. It would be a good opportunity to publicize the GEOTRACES results.

**Action:** Reiner to submit an abstract for a presentation at SOLAS Open Science meeting (September 7-11 2015 in Kiel). Abstract deadline is 27 May 2015.

**Action:** Bob Anderson to ask Keith Moore, who is a keynote speaker on atmospheric deposition at the SOLAS Open Science meeting to include a plug about IDP2014.

Discussion on how to deal with updating IDP2014 reference list?

Roy – He proposed to number the publications related to IDP. Authors should contact the IPO at the late stage to get the number on his publication. Bob Anderson and David Turner pointed that from past experience there is no benefit on doing this.

**Action:** SSC members: Inform their national GEOTRACES communities that when submitting a publication, to indicate whether it is IDP2014 related and, if so, to specify the parameter(s) and the cruise(s) involved.

**Action:** SSC to screen for GEOTRACES-related publications and send them to the IPO. SSC members to encourage colleagues to put GEOTRACES in the keyword, abstract and/or title.

**Action:** IPO to regularly remind SSC representatives to screen for publications (each 6 months).

Discussion about updating GEOTRACES Researchers Analytical Expertise Database:

Catherine explained that the IPO is concerned about having it up-to-date. E.g. keep track of postdocs that do not continue their scientific career.

Vanessa - She asked clarification about the database.

**Action:** IPO to prepare a description about the database and send it to Vanessa Hatje.

Katharina – She suggested expanding the list of clean sampling system to in situ pumps that can be borrowed.

**Action:** IPO to create a list of in-situ pumps that can be borrowed and post it on the GEOTRACES site (available to SSC members only).

Discussion of National Representatives:

Elena would like to know the process to review and appoint national representatives, since some of them might need to be reviewed and others added. The list of national representatives is shown.

**Action:** Carlos Rocha to be replaced by Peter Croot as representative for Ireland. Christoph Heinze to be replaced by Kuria Ndungu for Norway.

**Action:** IPO to send thank you/welcome letters to national representative, as correspondence.

Elena mentioned that so far, not all national representatives are requested to send a national report. Consensus was reached that all national representatives should be requested to provide a report.

**Action:** IPO to provide a list of national representatives and whether or not they provided an annual report. SSC to discuss whether another person should be appointed.

Bob Anderson mentioned Antje Voelker as a possible candidate for Portugal.

**Action:** For SSC that know about potential national representatives for new countries to send the name and contact details to the IPO.

### **GEOTRACES Publications**

First point is to remind SSC members to inform the IPO in advance about Special issues in Journals.

**Action:** SSC members to notify the IPO as soon as preparations for a special volume start.

### **Future Synthesis of IPY activities – Andy Bowie**

This is an action item from previous meetings but the paper will not be written. The item should be removed from the list of actions.

### **Oceanography Magazine – Bob Anderson**

Bob Anderson reviewed the history of this paper. He was invited to submit a synthesis about GEOTRACES on an IYPE volume but the volume never happened. A shorter and updated version of the document was finally submitted to Oceanography magazine and it is now published. The paper emphasises the procedures followed in setting up GEOTRACES as a template that can be followed by other groups who wish to establish a research program. It is an open access paper:

[http://www.tos.org/oceanography/archive/27-1\\_anderson.pdf](http://www.tos.org/oceanography/archive/27-1_anderson.pdf)

### **GA03-North Atlantic Transect: Deep Sea Research II Special Issue – Ed Boyle**

Bob Anderson, Greg Cutter, Rana Fine, Mak Saito and Ed Boyle are the editors. 24 manuscripts accepted already by the DSR-II editor. Four manuscripts are already available on-line but some technical problems delayed the publication. They are currently aiming for December 2014 as publication date. He showed the list of manuscripts submitted. They are manuscripts on: Stable- and radio- isotopes; Particles on the Ocean and Atmosphere; Hydrography and Biogeochemistry; Trace metal and ligands I; Trace metal and ligands II.

**Action:** Ed Boyle to ask DSR-II editor for the cost of about 100 hard copies.

### **KEOPS-2 project Special Issue in Biogeosciences - Andy Bowie**

Andy explained that there are 18 papers already submitted and 4 more expected to come in the coming month. They aim for the volume to be assembled early next year.

He also announced another volume for the SIPEX-II project (GEOTRACES Process Study).

### **Special Issue in Marine Chemistry – Alessandro Tagliabue**

Rob Middag was approached by Elsevier for a special issue in Marine Chemistry. So far they have got only 3 papers only but Alessandro believes this is due to late arrival (deadline is 31 October). They aim for a publication by end of August 2015. He clarified that papers are on-line as soon as they are accepted.

Question:

Maite – She asked if it is possible an extended deadline. Alessandro suggested that if they foresee a late submission to contact Alessandro or Rob.

### **2011 Data-Model Workshop's Special Issue in Progress in Oceanography - Catherine Jeandel**

Catherine explained that all the papers are written and that two are already in press. Co-editors are Catherine Jeandel, Olivier and Phoebe Lam. They believe all will be over by January 2015.

### **Volume at Elements Magazine – Catherine Jeandel**

Catherine explained that this is an action item from last SSC meeting. The way it works is as follows: there is the need for contacting first an editor (there are 3), then you need to propose a list of topics and possible papers, then identify the authors. Catherine interacted with the Executive Committee about this issue who questioned whether there is an audience sufficiently large to warrant the effort when people are already overcommitted.

Gideon spoke in favour of publishing it. Question is about the timing. Is this a good moment? Catherine asked who read the journal and about three SSC members raised the hands. Phoebe suggested waiting after the release of the next IDP. Reiner suggested to publish it after one of the Synthesis workshops and proposed to postpone the discussion until the discussion of the Synthesis Workshop. The title proposed by Catherine is “Synthesis of the first 4 years of the GEOTRACES Programme”.

### **IDP Publications Status – Reiner Schlitzer**

This topic is postponed as it will be discussed later on the agenda.

### **Earth and Planetary Science Letters (EPSL) – Gideon Henderson**

Gideon asked whether it was worth having an EPSL issue on GEOTRACES to follow lead of GEOSECS. EPSL is a quite influential journal. It was already discussed and decided not to follow, because no one wanted to constrain in one journal as some want to publish earlier than others. Gideon informed that EPSL are now doing an on-line virtual special issue, it consists on packing publications together but these publications are published in the particular journal, they only collect them on-line, these allows people to publish whenever they are ready.

### **IDP2014 and IUPAC’s Chemistry International – Ed Urban**

Ed Urban explained that it would be useful to reach a different audience to publish a paper about the IDP2014 at IUPAC’s *Chemistry International*. They have published other papers that Ed has recommended. David Turner wrote an article at the beginning of GEOTRACES. Ed Boyle thinks a chemistry-oriented person like David would be a very good person to write the article.

**Action:** David Turner and Ed Urban to work on putting together a paper at IUPAC’s *Chemistry International*.

### **South African Geological Society – Bob Anderson**

During the public lecture held in Cape Town on Tuesday 7 October, Bob Anderson was approached by someone from the SA Geological Society asking for a publication to be submitted to the GSSA bulletin. Roy informed that there is a marine community newsletter that would be a good target audience, as well. Bob, Roy and Catherine agreed to work on this.

**Action:** Bob, Catherine and Roy to work on preparing a manuscript for the SA Geological Society Bulletin.

### Other related issues:

Alessandro informed that at the DMC it was decided to publish something in a more popular magazine such as *New Scientist*.

Elena also informed that the Goldschmidt Press Office (Thomas Parkhill) had recommended her to post a 3D scene on the Twitter site “Amazing Maps”: [https://twitter.com/Amazing\\_Maps](https://twitter.com/Amazing_Maps) and that Ed Urban kindly offered to post them using the SCOR Twitter account.

**Action:** Ed Urban and Elena to post an eGEOTRACES’s 3D scene on the Twitter site « Amazing Maps ».

### **Outreach and Publicity Discussion** – Bob Anderson

Bob explained that starting point for this discussion is the US SSC meeting held in June where they received the message from Don Rice that the novelty of GEOTRACES results are not being conveyed adequately to the ocean community. GEOTRACES may not count on US NSF support beyond the Arctic 2015 expedition unless we achieve greater visibility and impact. And this has implications for GDAC, IPO and SCOR. The US SSC decided for the next US cruise to be deferred to have people publishing results to get more visibility.

Reviewing the goals from GEOTRACES work and achievements, Bob’s point of view is that so far GEOTRACES has got unprecedented distributions and inventories of TEIs. GEOTRACES have worked on looking at supply and removal and on internal cycling and transport, but there are not so much products on these. Bob suggested that GEOTRACES should work now on combining multiple TEIs, circulation tracers, and models to obtain sources, sinks, processes and rates. Bob urged to accelerate this process and before next IDP have some synthesis papers published.

Potential Synthesis strategies include:

- 1) Dedicated synthesis workshops (to address sources, sinks, processes and rates);
- 2) Summer schools (possibly in collaboration with SOLAS);
- 3) Organize sessions at other meetings (both science conferences and program meetings) to present AND discuss GEOTRACES results;
- 4) Incorporate substantial synthesis of previous cruises into planning meetings of future cruises.

Bob then presented a list of potential action items that could be done regarding publicity, impact, outreach and education:

- 1) “Super” science highlights - items for textbooks?
- 2) Encourage more publications in high-profile journals.
- 3) Provide education modules on web site (initiated several years ago but inactive), ideally linked to IDP2014 and updated.
- 4) Nominate speakers for named lectures at major meetings (e.g., Sverdrup Lecture at Ocean Sciences).
- 5) Commission a committee to write a textbook?

He then changed subject and showed the Implementation Plan for the EU-US-Canada North Atlantic Initiative Science Plan. In this document, “chemistry” including micronutrients is absent from this Science Plan.

Bob urged SSC members to read this science plan and ensure that nutrients includes “micronutrients” and that environment includes “chemical” as well as physical environment when referring to controls of ecosystems and biogeochemistry.

**Action:** For SSC members to read the EU-US-Canada North Atlantic Science Plan and submit comments to [hbenway@whoi.edu](mailto:hbenway@whoi.edu) before 17 October.

Gideon – He noted that this document will influence European funding.

Back to the discussion on strategies to increase the visibility:

Alessandro – He mentioned that is useful to invite modelers to cruise meetings.

Is it necessary to organize synthesis workshops on each of the GEOTRACES subthemes? Or may be two one on internal cycles or another on interfaces?

Ed Urban – He mentioned that the synthesis workshop could be structured by basin and then cover all the themes. Catherine pointed that we need to think on outreach, as well.

Bob point of view was that the community expects more from us, also the funding agencies, so he encouraged the community to think on something more novel than what has been done so far. Don Rice at NSF urges that GEOTRACES shows what is novel in the research. Bob suggested that it is very important to be aggressive on the communication and outreach of the GEOTRACES research.

Reiner – He mentioned that he understands the pressure on US researchers because they have received a lot of funding. He noted that what has been done so far, in this small amount of time, it is unprecedented. Reiner suggested that before achieving substantial collaboration and synthesis the package is needed. Bob pointed that marketing is very important, he urged for example, for SSC members to include in their talks a slide about the future, to show where the program is going. Ed Urban agreed with Reiner, and he advised not to enter in the argument that GEOTRACES needs to do even more because non-GEOTRACES colleagues complain about not getting funded; instead GEOTRACES needs to continue working to attain its goals as the programme is still ramping up. Reiner mentioned that the package is constructed to be used to answer the science questions and that we should give us time to use the IDP2014.

Bob asked SSC members to think on the potential synthesis strategies to discuss about them on Friday.

**Action:** SSC members to include in their presentations about GEOTRACES a slide about the future to show where the program is going.

THURSDAY 9 OCTOBER 2014

Reiner Schlitzer welcomed SSC members and reviewed the Agenda. First item will be the previous day's missing point "GEOTRACES Program Evaluation".

### **GEOTRACES Program Review** – Bob Anderson

The reason is that the US OCB programme was evaluated externally, by SustainaMetrix an organization that evaluates universities, research institutions, etc. The evaluation was done based in part on responses to a poll of the OCB community. Bob thought that GEOTRACES could learn from this poll to be prepared for a possible programme evaluation.

The polling provided demographic information of those who feel part of the programme community (location, position, discipline, profession, seniority). It assessed perceived effectiveness of the program in the following areas: organizing and implementing community activities; logistical support for community planning activities; nurturing emerging new initiatives; community building; communicating with the media, public; facilitating interdisciplinary linkages; scientific leadership; consensus building. Bob suggested these points are valid whether we are being assessed or simply aiming to serve our community.

Polling assessed also perceived effectiveness of various media for communicating: scientific publications, workshops, newsletters, science support, calendar and communicating with other programs. There was importance on communication with media, etc. but SustainaMetrix did not provide specific advice.

One criteria of the poll was "Involving people from within our discipline". Some questions that GEOTRACES could expect are: (1) How do people from other disciplines interact with GEOTRACES?; (2) What does GEOTRACES do to facilitate interaction by people from outside the program? (3) Do our products reach the right disciplines? Another criterion was about "effectiveness of program leadership", is it effective? And about "future directions" with questions such as: does the program have a strategy to establish priorities for future directions? There were criteria about "improvements" where the lesson was to solicit input from the community on strategies to improve the program. A criterion about the "mission" called for a statement *written for someone who isn't part of GEOTRACES, and who wants to know why they should be involved*. Examples of questions that were asked in defining mission were: how do you describe GEOTRACES at cocktail parties? What makes GEOTRACES different from other program? If didn't exist what would be missing?

Bob urged SSC members to keep in mind these criteria and in their seminars or talks to show that GEOTRACES is doing well on these criteria.

**Action:** Bob Anderson to send the OCB evaluation criteria to the IPO to be posted on the site.

**Action:** SSC members to read the OCB evaluation criteria available on the GEOTRACES private site (<http://www.geotraces.org/resources-ssc/lectures/969-geotraces-programme-evaluation>), keep them in mind and in GEOTRACES talks show that GEOTRACES is doing well on these criteria.

Catherine - She agreed on that it is very important to get these criteria. But she added that we need to improve also how the GEOTRACES benefits the society. How do you talk with journalists about GEOTRACES?

Gideon – He asked “who would be asked to review the entered GEOTRACES?” OCB is a US programme but GEOTRACES is international programme. Reiner pointed that the evaluation might never happen, but keeping these criteria in mind it would be very valuable.

Ed Urban – He mentioned that SCOR has never required an evaluation like this, but in his opinion it is a good idea. He encouraged GEOTRACES to be proactive and request such a review to prepare for the likelihood that a new programme manager will replace Don Rice in the future.

Olivier – He reminded the SSC about the importance of keeping in mind the broader impacts (outreach) when writing proposals.

Bob Anderson explained that when a proposal has been reviewed, he generally creates a directory about ideas that respond to the criticisms received and later use them to improve the next proposal. He suggested that GEOTRACES should start to act similarly and start creating a directory to collect ideas for GEOTRACES accomplishments including outreach materials.

Catherine – She suggested to keep a record about any review and article published in the press. For example, local press articles when a SSC meeting is held. Elena mentioned that in the site there is a web page dedicated to any GEOTRACES article published in the press.

**Action:** SSC members to send to the IPO any local article about GEOTRACES published in the press (newsletters, etc.). Also sent any idea about how to improve outreach.

COMMENT: I recommend that the SSC revisit this topic every year, that is, to review how we are informing the broader community about our success in fulfilling our mission.

## **Standards and Intercalibration**

### **Report on S&I Committee Activities – Greg Cutter**

Greg started the presentation reviewing the S&I membership. Two new members are Karen Casciotti and Tina van der Fliert. They are replacing Lou Codispoti and Roger François who rotated off.

He then reviewed the activities from last year. Two meetings for data reviewing were held: first one in May 2013 in Stockholm and a second one in September in Bremerhaven. The second one was a combined meeting with the DMC. There has been a large amount of traffic e-mail in late 2013 and beginning 2014 due to the IDP2014.

He did a summary of the IDP from the S&I viewpoint. The acceptability criteria were established by the elemental coordinators who solicited input from their communities. In general, less than 10 per cent was acceptable, but the level of precision deemed acceptable depends on TEI (e.g. Hydrography was less than 0.2%). He presented the % of variability of data for 7 crossover stations: Temperature varied 0.1 to 2.4%; Salinity 0.2 to 4.2%; nitrate about 0.1 to 2.5%; phosphate 0.1 to 1.3%; silicate 0.2-6.9%. He then showed the percentages for dissolved TEIs, this covered: Al ND; Cd 3.7-8.9%; Cu 2.0-4.2%; Fe 2.3-13.8%, Mn 2.9-29%; Ni 1.1-7.3%, Pb 6.9-11; Zn 1.2-23.

Reiner raised the issue that percentage might not be the correct approach and suggested for a column of absolute values in the future.

Many TEIs had insufficient data to thoroughly complete evaluations (e.g. N isotopes...). Virtually none of the crossover PIs/analyst had intercalibrated their data sets (i.e. compared identified offsets, come to consensus on acceptable data sets); S&I was the first to do this. This caused a lot of tension between the analysts and the S&I (S&I became the data police

which could inhibit investigators from submitting data in the future). Another problem was missing or incomplete metadata (e.g. recoveries for CRMs or consensus standards to assess accuracy). And also, non-overlapping depths or slightly different station locations required adapting statistical methods for comparing data (e.g. methods used for CARINA program).

Then he presented the lessons learned: (1) There was a lack on understanding of what the intercalibration process involved from the community, there was a lack of written policies on this and where the information is kept. (2) There was a lack of time since gathering the data, plotting it and statistically evaluating agreement/lack of agreement was a lot of work for the S&I Committee. (3) Presenting the results to analysts was very contentious, since S&I was then seen as the data police which is counterproductive for future evaluations, S&I should be seen a facilitator instead; (4) There was a lack of response by e-mails about intercalibration reports; (5) Incorrect or not reporting of metadata; (6) Lots of attention on TEI but little on nutrients and hydrography; (7) Lots of analysts providing data late in the process for the IDP – there is need to encourage this to happen earlier.

Recommendations for the future are:

- (1) Analysts will need to initiate the intercalibration and send a report to the S&I;
- (2) S&I need to develop clear policies/procedures for intercalibration for the PIs/analysts/ and they need to be properly communicated;
- (3) Use GO-SHIP protocols for hydrography and nutrients;
- (4) Need for new SAFe/GEOTRACES consensus samples, as well as CRM, including particulate and aerosols;
- (5) A renewed call for data on other elements in the SAFe and GEOTRACES samples as there are plenty of data in the literature now for REEs and other elements;
- (6) S&I is willing to look at new types of data (e.g. colloids, N isotopes);
- (7) Particles, Hg, Si isotopes intercalibration studies on going – are there more needed?
- (8) The GEOTRACES Protocols have to be rewritten to clearly state how to acquire the best hydrographical data;
- (9) For non-key TEIs/parameters (e.g. CFC, etc.) to rely on protocols of other programmes.

Cookbook: Greg explained that a new version is essentially done but still few more edits are needed. Then will send it to the SSC for review before posting it on the site. This will be done no later than November.

Main changes: The two first pages have been substantially rewritten. General considerations section rewritten to explicitly require intercalibration (and not recommend) on all GEOTRACES cruises (baseline or crossovers stations or replicate sampling and sample exchanges); CRM or consensus samples must be run to assess accuracy; metadata requirements elaborated. Other changes relates for example, to hydrography and ancillary parameters. Now explicitly requires GO-SHIP protocols for hydrography and nutrients.

**Action:** Greg Cutter to send the cookbook to IPO to be sent to all SSC members to allow on-site discussion.

Bob Anderson – He asked if the revised cookbook will be applied retroactively? Greg mentioned that S&I has not discussed this.

He finalized by presenting the next year activities:

- (1) Policies/procedures for intercalibration for PIs/analysts currently being drafted; it will be posted on web site and given to cruise leaders when their cruises are approved by SSC.
- (2) Protocols for S&I Committee to conduct intercalibration are also being written.
- (3) Now that TEI variability has been revealed, S&I will ask the elemental coordinators to reassess acceptability criteria.
- (4) Two meetings: first one, early 2015 in Galway (Ireland) hosted by Peter Croot and a second virtual meeting in mid 2015 to continue reviews. They believe that 2 meetings per year are needed.

Discussion:

Gideon - He suggested for S&I to send the procedures for intercalibration to SSC members to allow on-site discussion. Maeve sent the document to all SSC members.

Reiner – In his point of view, there are three possible subjects for discussion. First one, whether SSC agrees on the enforcing the intercalibration criteria. Second one, is about the procedure to have the intercalibration, if the requirement is for analysts to make first comparison, what kind of monitoring should be done about this process and by whom (someone needs to facilitate the process, remind analysts and help them). Third issue for discussion could be crossover stations versus replicate samples, since crossover has natural variability.

Maeve – She reported that during the DMC an action item has been set for Ed Mawji to generate a running inventory (e.g. google docs or similar) of all data that have been submitted to GDAC and make it available to the S&I Committee so that they can be informed of any new data submitted to GDAC.

Reiner – He proposed for the S&I to initiate the intercalibration process by contacting the PIs and in these e-mails to propose the process (for example, the CARINA procedure and explain how to do this). Maeve pointed that S&I has already prepared this document and is now open for discussion.

Who should do that? Ed Mawji should be providing this document to analyst. Geraldine suggested that the chief scientist should be also included.

Gideon – He pointed out that some data has been excluded because of the rule of needing to analyze the SAFE/GEOTRACES Standards. Gideon suggested that analyst should be allowed flexibility to develop other strategies beside the defined procedures and that if there is a way to demonstrate that the data is intercalibrated then it should be taken. Alessandro pointed out that the DMC decided that if there is an internal laboratory standard this should be considered. Bob reminded that the philosophy for GEOTRACES is accuracy but not prescription.

The discussion lead to the following statement:

**Decision:** GEOTRACES requires intercalibration, and recommends use of SAFE and GEOTRACES standards for those TEIs for which consensus values are available, but allows for other routes to trace accuracy of data, to be defined by the analyst.

#### Discussion on crossover stations versus duplicate samples:

Katharina Pahnke - She pointed that for some TEIs that require large-volume samples it is difficult and expensive to make duplicated samples. For those crossover is a good solution. Reiner explained that the idea is not to make crossover disappear, but that there are some problems with crossover stations (such as natural variability).

S&I should consider that for some TEIs that require large-volume samples crossover stations are needed.

Maeve – She argued in favor of maintaining crossover stations since replicate sampling is more time consuming (e.g. finding analyst to process replicates, exchange samples).

Olivier – He recommended crossover be complemented with replicate samples to help distinguish between natural variability and analytical variability.

Geraldine argued with Greg that crossover allows checking the sampling system.

#### Discussion moved to: How frequent the programme wants a laboratory to intercalibrate? Do laboratories that are intercalibrated need to follow the protocols for collecting replicate samples?

Maeve suggested that if methods haven't changed, then replicates may not be necessary. Ed Boyle noticed that things change so it is not sufficient. Gideon argued that all labs need to continue the standards, but this is different than replicating the samples analyses in other labs. Bob Anderson reminded that the consensus last year was that laboratories should do it in every cruise. There is a need for a policy the SSC agrees in this meeting. Any laboratory has new students who will not do things on the same way, so there is a need to continue regular intercalibration, so he argued that there is a need for replicate but questioned that this be mandatory. Katharina mentioned the fact that a lab participated successfully in intercalibration is not sufficient, and that the laboratory needs to continue either with replicate sampling or crossover. Gideon pointed that that if the bar is set too high this could make some data to be rejected because it did not follow the rule and this could be negatively seen by the funding agencies.

Reiner – He suggested postponing the discussion to the following day. He urged SSC members to read the intercalibration procedures and discuss during the breaks.

#### **Mercury (Hg) intercalibration – Greg Cutter**

The S&I has received the results from this effort. There are 25 laboratories participating. It will evaluate the whole effort. S&I was not informed in advance about this initiative, the group should have contacted the S&I to be informed about the procedures.

Reiner – He proposed that one of the Hg representatives should be integrated in the S&I. Maeve argued in favor. SSC members agreed.

**Action:** S&I Committee to invite one representative of the Hg intercalibration in the committee.

#### **Particulate intercalibration – Phoebe Lam**

Phoebe described the process, the samples distributed, the data received (by particle type and by country). There were 12 countries participating in the initiative. She showed some

preliminary results (by particle type). The criteria that she established is 20% below this are ok. For <sup>232</sup>Th there are only 1 lab reporting but she is awaiting for data. This is an on-going process. Phoebe explained that she is happy to do the first work and later to share the effort with other S&I Committee members.

Questions:

Andy – He asked for a timeline for submitting data. Phoebe answered that for the first meeting of the S&I in May it would that be possible.

Reiner – He asked about the quality, how will “acceptable” be defined? Katharina noted that there is a need to use variability within a filter as a basis for setting acceptable performance.

Katharina – She asked whether there are any samples available for those stepping in late. Phoebe answered that they have only a few samples left.

Reiner – He pointed that particulate data will become more important in the next IDP so this effort is very important.

### **Initiatives to get replacement for SAFE and GEOTRACES reference waters**

Status of US efforts to maintain capability developed by Ken Bruland and Geoffrey Smith - Bob Anderson

He started by describing the exercise led by Ken Bruland. He then showed the status of the samples left as of September 2014. For GEOTRACES IC 2008 there are only 16 or 18 remaining bottles and these are designated for work with Al at higher levels. Ken Bruland pointed that only a few results have been sent back.

**Action:** SSC members to encourage colleagues to submit results from SAFE/GEOTRACES standards to Ken Bruland.

The scope of the exercise needs to be expanded. However, the US NSF has indicated that funds are not available for this activity before 2017.

Kathy Barbeau, Seth John and Jim Moffet will submit a proposal in 2016 to do this, provided that SSC and the community at large is supportive. Proposal would move Ken Bruland’s infrastructure (tanks, pumps, etc.) to Scripps. He clarified that this proposal is not for a large cruise intercalibration initiative, but a quick cruise to collect the water and come back.

Si intercalibration samples – Bob Anderson

Mark Brezenski collected a large volume of water at the station ALOHA located in the north Pacific subtropical gyre. Main motivation is that no reference standard for seawater available (so far using standards for solids). He showed some preliminary results. 20 labs participated. Si isotopes analyses are sensitive to matrix effects. Investigators use solid standards because no reference seawater available.

Bob ended the presentation raising some questions for discussion: Shall we expand collections to TEI requiring larger volumes? (e.g. Si isotopes, metal isotopes, etc.). Is it necessary to continue collecting water at locations of previous collections (e.g. SAFE and BATS)? Or can more convenient locations be used?

### Status of the Dutch initiative - Micha Rijkenberg

Micha explained that Hein de Baar is trying to find funding to collect reference seawater. Main concern is that NIOZ cannot guarantee long-term maintenance of the system.

### Status of the German/UK effort – Maeve Lohan

Maeve and Eric Achterberg participated in an EU project proposal called AtlantOS “Optimizing and Enhancing the Integrated Atlantic Ocean Observing System” under Horizon 2020. In this proposal they requested funding to collect water samples on a German cruise off of Namibia. Results from the evaluation of this proposal will be known in November. The samples will be stored at GEOMAR.

Reiner - He asked whether US and UK initiative could be combined. Bob Anderson answered that the UK is one time opportunity. It might be worth for the US effort to be postponed and ask for a more long term plan. The idea is to do both, but if the UK is funded this will give time to US to submit a second proposal.

**Action:** Maeve to keep SSC and Kathy Barbeau, Seth John and Jim Moffet updated about the results of the EU project proposal that includes funding to collect seawater samples. If the EU proposal is approved, UK and US scientists to coordinate their efforts.

Maeve was informed that IRMM (EU Joint Research Center, JRC) is trying to establish a CRM for trace metals in seawater. Several trace metal analysts have received e-mails this week asking for participation. Maeve asked for further information and received the methods they used. One issue is that the trace metal concentrations are high because the samples come from the North Sea.

## **Data Management**

### **Report on GEOTRACES Data Assembly Centre (GDAC) – Ed Mawji**

Ed Mawji started his presentation thanking all scientists for sending IDP2014 data.

He then showed some statistics. There are a total of 57 cruises associated with GEOTRACES. From them: 13 IPY cruises / 24 Section cruises (16/17 sections) / 15 process studies / 3 compliant data / 2 intercalibration cruises. More than 240 scientists and students involved. 15 nations have run a cruise.

Then he showed the future cruises – One Japanese cruise will happen this year. Next year there will be several cruises in the Arctic.

He showed the map of crossover stations identified. Ed urged PIs to submit crossover data to the S&I Committee as soon as possible. He finished by showing the process studies. Ed Mawji mentioned that process studies are main data management issue since only a few have submitted data.

Discussion:

Reiner – He asked about the process to request data from process studies. Ed has difficulty in people answering his e-mails. Alessandro explained that the DMC discussed this issue and came up with the solution that DMC co-chairs will follow up and contact the PI or SSC

member to request the data. They will inform the investigator that if data is not submitted then the information will be removed from the GEOTRACES web sites.

Discussion then followed on how to intercalibrate process studies cruises:

Greg explained that for those cruises that do not have crossover stations, replicate samples should be collected. Gideon pointed that this should be clarified in the documents (e.g. the process studies criteria). If there is no crossover or replicate samples, what can be done? If the lab has been intercalibrated in the past should this data be accepted? Consensus was that the S&I should study process studies case by case.

**Action:** IPO to add more explicitly the intercalibration criteria in the process studies criteria document (hyperlink to the procedures).

**Action:** S&I Committee to study process studies case by case and decide how their results could be intercalibrated.

Bob Anderson would like to clarify who will start the communication with cruises on crossover stations. For example, for the GEOVIDE and the Canadian cruises. Geraldine explained that the interaction has already started.

Should the responsibility to be put on cruise PI to exchange information on crossover stations? This information needs to be exchanged to the IPO, GDAC and S&I Committee.

**Action:** Geraldine and Maite to interact about the crossover and send the information to S&I Committee, GDAC and IPO.

Discussion about the process to start intercalibration:

Consensus was reached on when the PI sends the metadata form to Ed Mawji, Ed shall send the intercalibration document prepared by the S&I. PI should interact and copy S&I, GDAC and IPO.

### **Report on Data Management Committee Meeting – Andy Bowie and Alessandro Tagliabue**

They started the presentation by showing the membership. They described the main discussions held and decisions taken during the meeting:

- (1) An extensive review of IDP process and lessons learned was done;
- (2) There was specific discussion on the Tier-1 and Tier-2 IDP data, the decision was to remove the Tier terminology and put instead the criteria for inclusion or exclusion of data;
- (3) There was also a discussion on how to expand the IDP beyond the Town Hall arena.
- (4) Another decision was on starting an IDP2014 feedback process, for this, a “SurveyMonkey” survey will be set by Ed Urban and both-co-chairs.
- (5) Another proposal is to re-word the phrase about if they wanted to be contacted about IDP updates in the IDP data package interface.
- (6) Also, DMC requested the IDP reference list should be improved.
- (7) Another discussion item was the DOI for the IDP 2014 since this is not a straightforward process in the BODC, so there is work to find options to get the DOI for the IDP2014.
- (8) There was also a discussion about next IDP (date and timeline): 2 options were discussed first option was to submit an update of the current version relatively soon (2016), second

option was to wait to have a more comprehensive IDP – the DMC decided the later, with time line as follows:

1 December 2016 for data to be submitted to the S&I Committee, 1 March 2017 for data to be submitted at GDAC. Release of next IDP at Goldschmidt 2017.

(9) They also reviewed the dataflow and GDAC capacity; DMC decided that to help data flow deadlines need to be firm although the process of data submission should be continuous.

(10) The DMC recognized the need for explicit communication of process and policies of GEOTRACES IDP.

(11) There was also a discussion on data assessment (approval of sampling codes, data errors, flagging scheme- need to specify system, derived variables (in principle only measurement parameters, but exceptions in rare cases), units and conversion (there will be guidelines).

(12) The meeting concluded on discussion on rotation membership.

Discussion:

#### Discussion about issues at GDAC:

Data submission remains a problem, in particular for process studies/compliant cruises. As informed previously DMC co-chairs will contact those scientists not submitting data and if they do not provide data the cruise will be removed from the site.

Reiner - He argued that the removal of the cruise from the sites should be the final decision. Decision on removing cruises from the site should be taken by the SSC.

**Action (rewrite :** DMC co-chairs to contact PIs that are delinquent in sending data to GDAC. For those scientists not submitting data to GDAC after being contacted by DMC co-chairs, DMC co-chairs to report to the SSC to consider removing from the web sites.

#### Discussion about next IDP timeline:

The two models discussed during the DMC were (1) one having a continuous release each 2 years or (2) having a more big event with more data on-board.

David Turner – He agrees on the DMC decision. He pointed that Goldschmidt is a different forum from Ocean Sciences Meeting so this is a positive point.

Reiner – He explained that the plan is to go to 3 years and in between some visuals in the meantime (e.g. Japanese data in the Pacific).

**Decision:** SSC agrees on releasing next IDP at Goldschmidt 2017 with time line as follows: 1 December 2016 for data to be submitted to the S&I Committee, 1 March 2017 for data to be submitted at GDAC.

Bob Anderson – He wanted to know which data is requested for compliant data. Answer: It was agreed to request at least temperature, nutrients and salinity data at the depths of TEI sampling.

**Decision:** For compliant data, provide (1) metadata and (2) temperature and salinity at the depths of the TEI sampling. Nutrients and oxygen are also desirable. It is desired to receive complete hydrographical data from all stations.

## Afternoon:

Reiner proposed rearrangement on the agenda. He explained that S&I procedures and the general policy for GEOTRACES Data document will be merged in one single document. This document will be discussed on Friday morning.

### **Criteria for a cruise to be designed section cruise – Reiner Schlitzer**

Discussion about the document guide for GEOTRACES ocean sections cruise leaders prepared by the IPO. Reiner proposed to discuss it by paragraph. The following discussion occurred for each criterion:

Criterion 1 - Agreed. Add “TEI” before measurements.

Maite asked if there should be a vertical resolution. Micha argued this should not be set as you might force persons to sample in a depth that is not needed. Gideon proposed to set a number. Decision was on NOT to specify a vertical resolution.

Bob Anderson pointed that there should be a definition on what the full depth is, so to put that it refers to “TEI” full column. This applies also to criterion number 2.

Criterion 2 - add “for at least the majority of key parameters” and “full depth sampling” as follows: It must have an average station spacing for full depth sampling of no more than 555 km for at least the majority of GEOTRACES key parameters.

Maite questioned the term “average”. Bob explained that this is intentional so that some cruises could intensify sampling in regions where doing so is more scientifically interesting. Reiner explained that the reason is to set a minimum. Bob pointed in the past it was discussed but a formal decision never taken, that all key TEI needs to be measured but not all TEI need to be measured in each station. Gideon supported this and suggested to put the “majority” of TEI. Catherine suggested adding a maximum number. Gideon suggested taking out “average”. Micha adverted that once a section is considered completed it is hard to find funding for a re-occupation, so he suggested that GEOTRACES should ask for high resolution in GEOTRACES cruises. Olivier and Reiner underlined the importance of having high resolution, as it is a lesson learned in the process. Gideon asked whether we want to formulate a maximum as well as a minimum. Seems the consensus is than 10 is too large. Catherine suggested leaving the decision of special cases to the SSC.

Decision was reached as follows: add “for at least the majority of key parameters” and “full depth sampling” as follows: It must have an average station sampling resolution for full depth sampling of no more than 555 km for at least the majority of GEOTRACES key parameters.

Criterion 3 – Agreed

Criterion 4 – It should be put at the end of the document as recommendation.

Criterion 5 - Add hyperlink to intercalibration procedures and add “further information is available on the cookbook which will be hyperlinked.

Maeve suggested that this criteria needs to refer to the intercalibration document and that it should be added as an annex. Bob proposed the first link to refer the intercalibration document and then put that “further information is available on” and that refers to the cookbook.

Criterion 6 – Several modifications are needed:

Criteria a) Ed Mawji pointed that most of the persons are not submitting the metadata to GDAC. Discussion about if this should be included or not. IPO explained the information that the IPO is requesting to PI to have the site updated. Decision: REMOVE this point. - Add “Once the cruise is funded the chief scientist must inform GDAC and IPO that the cruise has been funded”.

Criteria c) Substitute “cruise” for “analysis of samples”.

Criteria d) Remove everything after “Exceptions allowed...”

Criteria e) Remove it and include this statement in criteria b).

Criteria f) It should be moved to the recommendations parts.

Criterion 7 - PI must contact GDAC, so remove “national data centre”. Keep only the first sentence, since the other sentences are redundant.

Criterion 8 – To be removed.

Criterion 9 – Agreed.

Criterion 10 - To be included as recommendation.

**Action:** IPO to review the criteria for GEOTRACES cruise sections and post them on the site. IPO to review process studies criteria so that they are in accordance with the criteria agreed for section cruises.

Discussion on whether the SSC should review and approve section cruises:

So far, SSC has never had to do so, since the planning workshops already “approved” the cruises. But it might be necessary from now on. Catherine raised the issue that if there is a proposal that arrives in between SSC meetings then this could be evaluated by e-mail. All SSC members agreed.

Do we need a deadline to submit the proposal to the SSC? The process requires 2 months.

**Decision:** Chief Scientists must obtain SSC approval before submitting a proposal to a funding agency for a cruise that is called a GEOTRACES section cruise in the proposal. Proposals should be submitted to the IPO at least 2 months in advance of the submission deadline for the proposal requesting support for a section cruise. This information should be added at the top of the section cruise criteria.

See final document enclosed:

- SectionCruise\_Criteria\_SSC\_Oct14\_Final.pdf

Discussion about whether the German cruise in the Atlantic is it a section cruise (GA08)?

It was already discussed during last SSC, and was approved as section so no point to discuss about it. For the new German proposal in the Indian cruise the criteria applies and will be discussed later in the agenda.

Discussion about applying the cruise section criteria retroactively? What about those that do not measure all TEI?

Japanese cruise in the Indian Ocean (GI04): all the parameters were measured. In the north the spacing was 5 degrees but in the south the resolution is lower. Gideon proposed the Japanese line to be solid from northern terminus to 5°S, then a dashed line to 38°S, and a single point at 62°S. Danger on not doing that is that it appears as done so other nations could not get access to funding to make it in high resolution. Olivier supported to continue the dash line until the Antarctic Station. Jing mentioned that Yoshiki has already published these papers, in which he did not include the most Southern point.

SSC members voted: 14 for having the Southern point disconnected and 3 votes for having connected.

**Decision:** Japanese (GI04) cruise to be represented as solid line from E5 to E9 (5°S) stations and then to put as a dashed line until E14 (38°S. Disconnect the 62S point from the rest and show it as an isolated point. This applies as well to the station at the east.

**Action:** Ed Mawji to update the Japanese GI04 cruise on the Indian map and IPO's web site map. Decision was for Japanese (GI04) cruise to be represented as solid line from E5 to E9 (5°S) stations and then to put as a dashed line until E14 (38°S. Disconnect the 62S point from the rest and show it as an isolated point. This applies as well to the station at the east.

Indian cruises (GI01 and GI03): Maeve pointed that they never got any information on the Intercalibration process. There is a lack of knowledge also whether or not all key parameters were measured.

Reiner suggested sending the criteria to Sunil, explain that SSC is now responsible for approval, and ask them whether cruise should be designated cruises or process studies.

**Action:** SSC co-chairs (cc GDAC and IPO) to send the GEOTRACES section criteria to Sunil and ask them to prove the compliance for GI01 and GI03.

### **GEOTRACES Intermediate Data Product 2014 – Ed Mawji and Reiner Schlitzer**

Ed Mawji presented some statistics: 314 downloads (but some duplicates) were done. From them 180 do not want to be contacted and 134 are happy to be contacted. He showed the list of countries that downloaded data. In the US 150, UK 64, Germany 18, France 10, Canada 10.

Alessandro – He commented that would be interesting to compare the stats on the website visits versus downloads of the IDP.

Reiner presented some eGEOTRACES usage statistics. Total 3679 visits and 34464 page views. The peak was 421 on the day of the launch and then progressively went down. The average now is 10 per day. After the SCOR annual meeting there was 30, so meetings do have an impact. Most of the visitors come for the geotraces.org (504) and then it follows the sciencemag (421); then it follows a German science popular journal; GDAC; Facebook (109). Reiner pointed that making national press releases works. He showed the map about where the visitors come from. US is at the top of the list (1952) followed by Germany (874). There is a close match with countries involved in GEOTRACES except for Argentina where no visit is done.

### Lessons learned from the IDP – Reiner Schlitzer

Reiner explained that there are 4 main points that need to be dealt with before constructing the next data product:

- (1) Data need to arrive earlier – This implies reviewing the data flow to identify time-consuming steps and adapt. For example, creating parameter codes is a time consuming steps. Also, some other persons need to be involved in the data flow.
- (2) PI (responsible and contributing) information per parameter needs to be more accurate since these names will be placed on data products.
- (3) Quality assessment by the S&I Committee (the Tier 1 and Tier 2 will be reviewed).
- (4) Method of linking publications to the data needs improvement.

#### DOI assignment for the IDP2014 – Reiner Schlitzer

Reiner explained that the IDP2014 presented in Honolulu was 98% complete. Some data was accepted to be included later and some modifications done. This has been completed by Reiner and submitted to Ed Mawji. Reiner is working to get the DOI. The plan was to ask the BODC to get the DOI. The point is that BODC assigns DOI to datasets completely free (not registration needed). Negotiation is under process, but the current agreement reached was felt to be insufficient by the DMC.

A solution would be to publish the data as a research paper. The article would consist of a product description with a couple of highlights and in this article to have the datasets enclosed. This article will have the DOI. Then contributors could be requested to cite the DOI. The issue is the authorship (how to include all data contributors as authors). Reiner approached the *Earth System Science Data (ESSD)* but again the registration requirement is an issue. DMC is exploring for an article in *EOS* (Ed Boyle is waiting for an answer if *EOS* can accommodate more than 100 authors).

Alessandro – He pointed that another project used the solution to put as author the “project group” and then in the annex all the authors are listed. However, one issue is that *EOS* is not included in web of science. Reiner pointed that another alternative is *Nature*’s data journal but they request DOI provided by a Data Center.

Ed Urban – He pointed that *Oceanography* magazine is included in Web of Science.

**Action:** Ed Urban to contact *Oceanography* magazine to see if an article of the IDP description with some science highlights, including the dataset could be published. Also see if they can deal with the authorship (so include GEOTRACES group as author and all the authors in the annex).

Phoebe – She pointed the problem is that *Oceanography* is less distributed than *Eos*.

Shall the registration requirement be relaxed? Conclusion was that the general SSC feeling is that the registration requirement is still important and needed.

Other options of papers? *EPSL*, *Marine Chemistry*.

**Action:** Gideon to contact *EPSL* to see if an article of the IDP description with some science highlights, including the dataset could be published. And also, to see if they can deal with the authorship (so include GEOTRACES group as author and all the authors in the annex).

**Action:** Alessandro and David to contact *Marine Chemistry* magazine to see if an article of the IDP description with some science highlights, including the dataset could be published. And also, to see if they can deal with the authorship (so include GEOTRACES group as author and all the authors in the annex).

## GEOTRACES Sections – Reiner Schlitzer

### **Indian Ocean**

#### New German cruise proposal in the Indian Ocean – Katharina Pahnke

Katharine presented the German proposal for an Indian cruise (GI06). It will have 2 crossover stations. One with GI03 and another with GI04. One thing to be taken into account is that crossover with GI04 might not be realistic. Katharina presented the goals of the cruise. The SSC reviewed the criteria that have just been approved.

Discussion:

Maeve pointed that the request should be done for them to collect replicate samples as crossover might not be possible

**Decision:** SSC approved the German Indian cruise as GI06 section.

**Action:** Katharina to inform GI06 chief scientists that they should collect replicate samples.

**Action:** SSC co-chairs to send the section cruise criteria to the GI06 chief scientists.

#### Discussion on the GI05 section cruise – Andy Bowie and Catherine Jeandel

Catherine and Andy are still working on deciding the section line. The southern line would be hard to interpret because of variability in the ACC.

Gideon noted that there is no good meridional section with all key TEI down the length of the Indian Ocean. Maeve explained that there is an UK proposal to be submitted in the Indian Ocean but it is biological one. Greg suggested that GEOTRACES should look at IIOE-2.

Discussion about whether there is a need for an Indian Planning Workshop:

Reiner – He asked if there is a need for an Indian Planning Workshop. Catherine pointed that if a workshop is going to be done this needs to be done soon. SSC agreed to organize this workshop. SSC agreed for Catherine and Andy to organize an Indian Planning Workshop.

#### Proposal for a GEOTRACES SE Indian Ocean section cruise – Katharina Pahnke

Katharina presented the cruise track for a joint EU-Australia cruise. It would depart from Australia (Perth) down to Antarctica and then back to Hobart (like a “V”). The cruise might have 2 crossover with GI05 and the Australian cruise. She presented the objectives. The plan is to use the new R/V Sonne II (14 days transit time) due to 30 September.

Discussion:

Andy – He pointed that there might not be possible to get enough ship time to do both legs.  
Olivier – He argued that might be better to do only one leg at higher resolution since the frontal gradients are very steep. Reiner argued that a single resolution would be preferable (he does not expect large concentrations changes from one section to the next).

Catherine – She pointed that this could be a topic for the Indian Planning Workshop.

## **Pacific Ocean**

The US is interested in GP15 and GP17. Canadian will cover GP04. One potential gap is GP06, GP07 and GP08.

### Proposal for Process study along GP06 – Jing Zhang

Jing Zhang presented a possible process study covering GP06 line. Tentative dates are October to November 2015. In Japan they will cover all parameters but this is not the case for China, this is the reason she is proposing it as process study.

Should this cruise be labeled process study or section cruise? Decision postponed to Friday.

Gideon – He asked Tung-Yuan if they could cover any of the lines GP06, or GP07 or GP08. Tung-Yuan explained that they are not measuring all key TEI. Gideon encouraged Tung-Yuan to identify what was not measured and send the information to the SSC to seek help in covering all parameters.

## FRIDAY 10 OCTOBER 2014

Reiner started the meeting by thanking Roy for the organization of the group dinner and the meeting in general.

Announcement from David Turner that the Marine Chemistry's the editor responded positively about including the IDP2014 data paper. The editor thought up to 150 names is high but need to check. The deadline to submit the papers is end of October 2014. The hardcopy would be available on August. Andy Bowie mentioned that requirement to have the 150 authors included needs to be clarified.

**Action:** David and Alessandro to follow with Marine Chemistry and verify that all data contributors could be included as co-authors when the paper is cited.

### **GEOTRACES Sections** (continuation)

#### **Arctic**

The proposed UK Arctic cruise was not funded. Canada, Germany and US have cruises happening next year. Swedish scientists could not get funding. As for Russian cruise, Ludmila contacted Bob Anderson and told him that she is optimistic in getting some funding for cruises.

For next IDP there could be some cruises already there (US, Germany and Canada).

#### **Atlantic**

Atlantic was already discussed, with the cruise from Germany happening next year.

### **Intercalibration procedures for GEOTRACES cruises** – Maeve Lohan

Reiner introduced the discussion. He explained that the Cookbook includes a detailed intercalibration procedure. But that there was a need to have in addition a more concise listing document. The S&I has worked on preparing it. It consists on 2 documents: (1) for cruises with crossover station and (2) for those that do not have crossover station. Maeve read the document.

Bob suggested some wording “analysts affiliated with GEOTRACES” instead of “analysts on GEOTRACES cruises”. Bob will send the wording to Maeve.

For cruises that do not have crossover, Gideon mentioned that it should be specified that all TEI need replicate samples. Catherine argued that for some TEI requiring large volume this is very painful. Agreement was reached on specified “at least key TEI”.

Maitte mentioned that in some cruises there might be crossover station but for several reasons (because of natural variability, etc.) replicates still need to be collected. Bob Anderson suggested: “Requirements for GEOTRACES without crossover stations and for cruises for with crossover stations”.

Another point was to add that “exceptions to these requirements need approval of the S&I”.

Alessandro – He asked “what about those that do not follow the steps?” He suggested to convert the document wording to say “must” so the document is more obligatory.

**Action:** Maeve and Greg revert the S&I procedures into a more “obligatory” document and add all comments and send it around to SSC for approval. IPO to put the approved procedures on the GEOTRACES web site.

See final documents enclosed:

- Intercalibration\_procedures\_with\_crossover\_station.pdf
- Intercalibration\_procedures\_withANDwithout\_crossover.pdf

### **Terms of Reference for GEOTRACES SSC and Standing Committees** – Reiner Schlitzer

Reiner explained that the idea is to summarize the role and tasks of the GEOTRACES Committees. Reiner invited SSC to provide comments rather than reading through the document.

Bob - In the first line add that the SSC has responsibility to set policies.

Andy – Andy is concerned about the standing committee membership term. He explained that during the DMC Ed Urban clarified that SCOR does not require standing committees to have membership term limits. SCOR encourages rotation of subgroups, but the decisions are by the SSC. David Turner mentioned that appointing someone for 3 years is not enough. So the term is for 3 years but it can be renewed. Maeve suggested that it is important to refresh committees and in that way is quite vague. Decision was reached in removing “once, for a total commitment of 6 years”. Who has the role of deciding? So far the responsibility is on the SSC.

Ed Urban – He explained that SCOR will look at the approved ToR and might provide comments.

**Action:** IPO to review ToR and send it to SCOR for comments.

See final document enclosed:

- 2014\_ToR\_GEOTRACES\_Committees\_Final.doc

### **Regional Activities** – Reiner Schlitzer

Asia coordination: Is it worth organizing another workshop?

Reiner introduced the discussion: there is the possibility for the cruise from Jing Zhang to be converted into section with China and other collaborations. Another possibility is for Taiwan to get one section cruise with international collaboration.

Gideon noticed that there have been 2 regional workshops already. Jing explained that a possibility for a new workshop could be in 2016 during the Goldschmidt Conference. Another possibility could be end of 2017.

What about the Taiwanese line? Tung-Yuan explained that in terms of capacity building Taiwan is quite ready but in terms of covering all the key TEI, he needs to check if they have the possibility to cover all only with Taiwanese scientists otherwise will seek international collaborations (e.g. with China). It might be possible for them to held GP07 next year.

Discussion made clear the need to organize a meeting to discuss about this. Decision was on organizing the meeting during the Goldschmidt 2016.

**Action:** Tung-Yuan to explore the possibility to make the GP07 as section cruise

**Action:** Yoshiki, Jing and Hajime to organize an Asian cruise planning workshop at Goldschmidt 2016.

#### Latin America coordination – Vanessa Hatje

Vanessa explained that the CAPES (Coordination of Improvement of Higher Education Personnel) have funding available for training exchanges. Brazil joined ODP as full member. She would like to organize training exchanges for GEOTRACES. She will meet Marcio Castro (director of CAPES) in November 2014 and she would like to negotiate scholarships for GEOTRACES (support for individuals to be trained either in Brazilian established labs overseas and in cruises and also fellowships for post-docs in Brazil). Vanessa informed that they provide large amount of money for these exchanges.

Vanessa requested a letter of support from GEOTRACES and SCOR. Gideon suggested having letter from research institutions committing to take the students. Decision was on including the names of research institutions interested at this stage.

Ed Boyle explained that in the case of MIT, it would require the formalization of an agreement.

SSC is enthusiastic and encourage Vanessa to go forward with the initiative. It was suggested for Vanessa to invite Angela Wagener and Felipe Niencheski.

**Action:** Vanessa Hatje to contact CAPES to set the programme fellowships.

**Action:** SSC co-chairs and SCOR to send a letter of support to Vanessa.

**Action:** Vanessa to send a paragraph to the IPO, to be distributed by the SSC. SSC members to share this information with the national committees and compile information about those laboratories interested in hosting Brazilian students to be sent to the IPO.

Vanessa informed that in 2015, there would be a summer school – Application of Radioisotopes to Ocean Sciences organized by Bill Burnett from FSU. Vanessa asked if there are other interested to be involved. Catherine proposed Peter Van Beek (LEGOS, Toulouse).

Angela has informed Vanessa that there will be a national meeting on Analytical Chemistry in October 2015. Angela would like someone to make a presentation on analytical issues regarding trace element in the ocean waters.

They have submitted a proposal to get funding for training on clean sampling, sample pre-treatment and analysis for TEI in ocean waters at the National Institute for Science and Technology on Tropical Marine Environments. Vanessa would like to know if there are other interested to be involved. The following persons expressed interest: Maeve, Micha, Gideon and Tung-Yuan.

#### European collaboration – Gideon Henderson

Gideon made a quick screen on European funding. It seems that there is no a specific opportunity for GEOTRACES. The Marie Curie (specially ITN) are still an opportunity for GEOTRACES.

## **Budget** – Ed Urban

Ed Urban explained the importance for each involved country to contribute funding for the programme. Funding for GDAC and IPO is assured until 2016, assuming that NSF funds the renewal proposal. Gideon noticed that the annual balance is decreasing every year.

Urban then showed the overall budget for the programme. The SSC meeting this year is exceptionally costly, up to 58,742 USD. The IDP cost was lower than expected, because part of the expenses were covered by US GEOTRACES. For 2015, there is 20,000 USD for Data-Model Synthesis Workshop and the same for Atlantic Synthesis Meeting. The balance in each year is negative for 2014 on 2,849 USD, 24,849 USD in 2015. The balance can be reduced by eliminating the Data-Model Workshop.

Reiner announced that AWI money will be available (10,000 USD) for 2015. Reiner suggested to postpone the Data-Model Synthesis meeting until later. Micha will check if there is the possibility to have more funding from NIOZ.

**Action:** Micha to check if the NIOZ funding for GEOTRACES could be extended.

Ed Urban explained that any contribution can be done either to GDAC (NERC), IPO or SCOR.

Urban showed a quote from Don Rice where he explicitly asked to reflect the non-U.S. money received for the GEOTRACES Programme. So, Urban has started compiling records of all the money received. It shows that around 50% is non-NSF money.

**Action:** SSC members who cover GEOTRACES related expenses from own sources (e.g., cover own travel to SSC, etc.) to send the information to Ed Urban.

## **Process Studies and Compliant Data**

### **Vici Fe** – Micha Rijkenberg

Micha explained that this is a process study from Dr. Caroline Slomp. It will study the release of Fe from continental shelves in the Baltic Sea and Black Sea. This consists of 2 cruises one in the Baltic and another in the Black Sea.

**Action:** Maeve to send the stations from the Shelf Sea to Micha (or Caroline Slomp) look for crossover within ViciFe and Shelf Seas process studies.

Reiner pointed that this is basically 2 process studies. Gideon pointed that they need to make clear that they need to take replicates or crossover.

Maeve suggested sending the approved intercalibration procedures to all PI.

**Action:** IPO to send the intercalibration procedures to all PIs from process studies.

Reiner went through the list of criteria for process studies. Criteria number 6 was not completed but will be done so.

**Decision:** SSC approved ViciFe cruises as two process studies.

### RidgeMix – Alessandro Tagliabue

This is a proposal submitted by Alessandro or Maeve at NERC. It is about the effects of the mid-ocean ridges on the ocean's iron cycle.

Reiner – He asked about the intercalibration process. Greg does not see any inconvenience on the intercalibration procedure. No objection.

**Decision:** SSC approved RidgeMix cruise as process study.

### PEACeTIME – Geraldine Sarthou

Process studies at the Air-Sea Interface after dust deposition in the Mediterranean Sea. The PIs are Cécile Guieu and Karine Desboeufs. The timeline is May 2016 on R/V Pourquoi pas?.

Catherine – She asked: “what about if there is no dust event before the cruise?” Geraldine is awaiting information about this issue.

Greg – He asked the list of parameters. Geraldine pointed that there is at least one GEOTRACES key parameter.

Reiner – He asked about intercalibration. Geraldine answered that a possibility is to have a crossover with the Mediterranean GEOTRACES cruises. Maeve recommended that they get SAFe/GEOTRACES samples and analyze them for quality control. Because of seasonality, replicates would be recommended.

**Action:** Micha and Jordi to send coordinates of stations of their cruises to Geraldine to determine whether crossover station with PEACeTIME process study are possible.

**Action:** Geraldine to contact the PEACeTIME principal investigator and recommend: 1) that PIs get SAFe/GEOTRACES samples and analyze them for quality control, 2) occupy crossover stations if possible, 3) collect duplicate samples for intercalibration even if a crossover station is occupied.

**Decision:** SSC approved PEACeTIME as process study.

**Action:** SSC co-chairs to sent an approval letter to Geraldine.

### UltraPac – Katharina Pahnke

Katharina explained that the chief scientist for this cruise is Tim Ferdelmann and that Peter Croot and herself will be the GEOTRACES PI. Cruise is funded and planned from December 2016 to January 2017. She described the objectives of the cruise. The GEOTRACES key parameters are Nd isotopes and concentrations and dissolved for Fe, Al, Cd, Co, Cu. Peter Croot will be sampling ancillary data.

Catherine – She suggested for them to borrow a clean rosette and apply for a section. Several SSC argued in the same way as well.

Alessandro – He pointed that it might be the possibility for this cruise to crossover GP13. Another possibility is to crossover with the Japanese GP19.

**Decision:** SSC approved UltraPac as process study but pending whether it could be converted as section cruise.

**Action:** Katharina to seek possibilities to convert UltraPac process study into a section cruise by adding more parameters and borrowing a clean sampling system to allow sampling over the full water column.

**Action:** Katharina to collaborate with Australian and Japanese SSC members to set crossover station for UltraPac process study with GP13 and GP19.

#### KH-15-4 Process Study – Jing Zhang

Jing explained that the cruise plan is still under discussion. There will be several meetings held in the coming months to finalize the planning. Jing has involved Taiwan and China on board. There might be issues of sampling in Korean EEZ and also when sampling in Chinese waters only Chinese scientist can make them. Jing is awaiting Korean EEZ clearance. The cruise is to be done from October 14 to November 02, 2015.

There was a discussion about whether it shall be considered a section or a process study. It was concluded the later.

**Action:** Pinghe and Jing to contact UK and France to see if a clean rosette and winch can be borrowed.

**Action:** Jing to interact with Katharina to get coordinates to set a crossover station for KH-15-4.

Phoebe Lam – She asked if this politically complicated project could be highlighted as a programmatic success of GEOTRACES if it is completed as planned. Would any of the nations involved object if the scientists promoted the scientific success of the collaboration? Pinghe Cai answered that the issues are territorial, not scientific, and the nations encourage scientific collaboration.

**Decision:** SSC approved KH-15-4 as process study.

There was a discussion on the process to inform PIs about the approval as process studies. The SSC agreed that a formal letter from the co-chairs should be sent. And that in this letter, to include the intercalibration document AND that they need to contact GDAC.

**Action:** The SSC member who presented each process study to inform PIs of the process studies informally of the SSC decision. IPO to send a formal approval letter to the PIs, which includes the intercalibration procedures and also states the expectation that the PIs will provide Ed Mawji with cruise information as soon as the cruise is funded.

#### GEOTRACES Workshops

##### Royal Society Science Meeting – Gideon Henderson

Gideon explained that the proposal was submitted in January 2014 and was funded in summer. Dates offered and agreed as Mon 7<sup>th</sup> to Thur 11<sup>th</sup> 2015. The first two days will be an open science meeting, with up to 300 people and free registration. It will be held at the Royal Society in Central London. The second two days there will be a discussion meeting at Chicheley Hall and it will be restricted to up 85 people (by invitation). There is the obligation to publish a special issue of the Royal Society Proceedings.

**Funding:** Royal Society covers the costs of accommodation and contributes to travel expense from the meeting organizers, speakers and chairs.

He presented the programme for the science meeting. Convenors are Gideon, Ed Boyle, Maeve Lohan, Micha Rijkenberg and Geraldine Sarthou. There will be 4 sessions: (1) The

chemical cycle of trace elements in the ocean; (2) Micronutrients and biology; (3) Understanding chemical tracers of past and present process and (4) Human influence.

The discussion meeting will be about “Quantifying fluxes and processes in ocean trace-metal cycles”. The first day will be dedicated to « Quantifying fluxes at Ocean Boundaries » and the second day to « Internal cycling of trace elements”. He presented the programme. There is a need for additional funding.

Discussion:

Reiner – He thanked Gideon for organizing this meeting.

Ed Urban – He asked about this being the Synthesis Meeting. The general feeling is that this responds to it.

Bob – He pointed that more time might be needed for discussion. There was discussion of whether the workshop should specifically focus on boundary fluxes and defer internal cycling to a later workshop.

When should a Data-Model Synthesis Workshop be held? General consensus is in 2016.

Bob – He argued in favor of the workshop to be mainly focus on the Atlantic but not only, also allowing for a more wide focus. Reiner suggested that it would be very positive to have it before the release of the IDP2017.

Olivier - asked whether OCB people should be included. Bob Anderson suggested that he could contact OCB if they could pay for 10 persons to attend.

Discussion: Shall we plan a second workshop where much more focused on internal cycling and where more micronutrient-biota interactions are emphasized?

Catherine and Maite argued for a combined workshop for funding reasons. Bob explained that he will submit a proposal for the US Project Office and in there he would request some funding for a few persons to participate to the Workshop (but this in detriment of other proposals). Another possibility is to ask OCB to co-support a day at an OCB meeting devoted to internal cycling (including metal-biota interaction) and provide facilities for additional 1.5 days for supplementary workshop for core people to further synthesis and outlining future synthesis papers.

Catherine – She suggested incorporating some component of physical coupling. Agreed.

The advantage is that this would engage a much broader portion of the OCB and other ocean research communities in the general internal cycling, including metal-biota coupling. We would want to engage all interested biologists and physical oceanographers during the day of OCB.

Olivier – He reminded the importance of involving modelers as well.

Ed Urban explained that the SCOR money could be split so the money for the Data-Model Workshop to be used to cover the Workshops. Reiner added that if these funds are used that way GEOTRACES need to make sure that modelers are involved in the Workshops.

**Action:** Bob Anderson to inform OCB about the Royal Society Workshop and ask if they would co-support travel for some non-GEOTRACES people to attend the Workshop. Also explore the possibility that OCB would co-support a day at an OCB meeting devoted to TEI internal and provide facilities for 1.5 days of additional workshop at WHOI (Thursday afternoon and Friday) for core people to further synthesis and outlining future synthesis papers.

### US GEOTRACES Synthesis Workshop – Bob Anderson

Bob explained that during the US SSC meeting it was suggested to have a 2-day synthesis workshop immediately after the Ocean Sciences Meeting 2016. The US SCC proposed it could be expanded internationally. Due to Don Rice's remark on achieving greater visibility, they decided that 2-days is not enough and that a more substantial meeting is needed. Nevertheless, the US Project Office will hire rooms to work on synthesis papers.

Gideon – He suggested that this could be a follow up for the Royal Society Workshop to advance the work on the synthesis papers. Bob pointed that it might be a bit late in terms of timing and readiness for people to organize the meeting after the RS.

There are two options to explore: an OCB partnership or a stand-alone international GEOTRACES workshop hosted by the US.

**Action:** Bob Anderson to report the US SSC about the Royal Society Workshop and the partnership with OCB and ask for input<sup>1</sup>.

### Need for a greater synthesis of results – Bob Anderson

Bob Anderson encouraged everybody to convey the results with all colleagues. There is pressure for results, so there is a need to better communication of the success results and the plans for the future.

### Need for a Southern Ocean Planning Workshop?

Reiner proposed to combine this with the Indian Ocean Workshop. Gideon and Andy argued against the idea. He added that scientifically there are arguments to combine them.

Who could be the potential person to lead the Southern Ocean Planning? Seems that there will be an overlap with the Indian Ocean Workshop and that could justify a combined meeting.

Discussion moved to the topic on the venue for the meeting. Ed Urban suggested using a meeting where people attend and then just pay for the room. Goldschmidt 2015 is an option since several of the SSC are attending the meeting.

Who shall attend the meeting? Catherine has already a list of SSC members that expressed interest to participate last year. In addition, Indian and Japan should be included. This could be done as a videoconference meeting early in 2015 and then decide if a following meeting at Goldschmidt is needed or not. The meeting will be focused on Indian Ocean it will also cover the Indian sector of the Southern Ocean.

**Action:** Catherine and Andy to organize the Indian Ocean Planning Workshop and make sure that (1) the relevant countries are involved and (2) that physical oceanographers and may be someone with a southern ocean perspective are also involved.

Regarding the Southern Ocean Planning who is particularly interested? Alessandro, Andy and Bob.

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<sup>1</sup> The US SSC discussed all of these options and concluded that a dedicated workshop on internal cycling of TEI was the best approach.

Olivier – He pointed that it would be good to include physical oceanographers such as Michael P. Meredith (British Antarctic Survey, Cambridge, UK). Andy suggested Steve Rintoul (CSIRO, Australia). Bob also offered to provide other names, if needed.

Bob Anderson reminded the SSC that US is interested in making the GP17 line but that the horizon is 2020. He wanted to know if other countries are interested in coordinating a section.

Reiner summarized: The SSC agreed for a workshop focused on Indian Ocean but decision on a Southern Ocean Planning Workshop is still open.

### **GEOTRACES Special Sessions**

#### Conference Our Common Future Climate Change – Catherine Jeandel

Catherine advocated in favor for GEOTRACES researchers to bring science into the Conference Our Common Future Climate Change to show what GEOTRACES could contribute on the debate. Catherine suggested that it would be nice to organize a parallel session. Several SSC members argued that the conference is too far from the scope of GEOTRACES so it was decided not to submit a session.

#### 2<sup>nd</sup> International Ocean Research Conference “One Planet, One Ocean” – Jordi Garcia-Orellana

Jordi submitted a talk to the Conference “One Planet, one Ocean” as suggested by the Executive Committee. He would like to know who the authors should be for this presentation. It was suggested including as names in addition from Jordi Garcia-Orellana: Ed Mawji, Reiner Schlitzer, Elena Masferrer and the GEOTRACES group. Bob Anderson explained that the previous conference had a great impact to NSF. Don Rice got 20% increase in the budget.

#### AGU Fall 2014 Special Sessions – Greg Cutter

Greg reported that there will be 2 GEOTRACES special sessions at AGU Fall. One is in honors to Tom Church retirement. The other is related with the eastern tropical South Pacific (US GEOTRACES Zonal Transect). There are also a few GEOTRACES related sessions. All the information is on the GEOTRACES site.

#### Goldschmidt

Ed Urban asked for feedback on the IDP2014 Town Hall organized at Goldschmidt conference. The context was very different from the one organized at Ocean Science 2014, it was more training and education. SCOR paid for the lunches. Conclusion was that there is no need to repeat it in the future.

Geraldine explained that in collaboration with Andy they plan to organise a theme on Ocean Chemistry in 2015. She presented the list special sessions proposed. Deadline to submit sessions is end of 2014.

In addition, Geraldine is also chairing a session with Angelica Peña in the “Symposium Effects of Climate Change on the World’s Oceans” that will be held in Brazil on March 2015. Micha and Maeve accepted to be plenary speakers on it.

### ASLO 2015 Special Sessions

The abstract deadline is today. The ASLO organization were interested in having a GEOTRACES session. The session needs a convener.

Maité will participate to the meeting. She is chairing a session on Biogeotraces. She volunteered to convene the session but she will let know other persons if they could convene.

### Ocean Sciences Meeting

Alessandro reported that at the Ocean Sciences Meeting 2014 some sessions were obliged to merge with other sessions and that this should try to be avoided. Greg Cutter will try to look carefully at this.

### PICES 2015 – Ed Urban

Ed Urban suggested for GEOTRACES to organize a session at PICES since it is a forum to expand GEOTRACES to other communities. This might be done after the next IDP.

### **Capacity Building** – Ed Urban

Ed reminded SSC members that there are a couple of SCOR funding opportunities from which GEOTRACES can benefit. The first is for SCOR funding researchers from developing countries to participate to GEOTRACES cruises (SCOR funds travel costs). The other one is for developing countries to invite researchers to teach (SCOR Visiting Scholars program).

### **SSC, DMC and S&I rotations** – Ed Boyle

#### Scientific Steering Committee (SSC)

The persons whose term ends this year are: Tung-Yuan Ho, Phoebe Lam, Katharina Pahnke, Micha Rijkenberg, Alakendra Roychoudhury, Geraldine Sarthou and Yoshiki Sohrin.

Japanese GEOTRACES Committee has discussed rotations internally. They propose for Yoshiki to rotate off and be replaced by Hajime Obata. He is already involved in the S&I Committee.

Tung-Yuan Ho, Phoebe Lam, Katharina Pahnkem Micha Rijkenberg, Alakendra Roychoudhury and Geraldine Sarthou accepted to continue for a second 3-year term. Ed Boyle thanked them for accepting to serve.

Pinghe Cai – He would like to rotate off and nominate Liping Zhou from Peking University (PKU). Gideon pointed that he knows him and is confident of his commitment. However, he expressed the concern that PKU has not an established oceanography programme. Pinghe mentioned that Liping's candidature has strong support of GEOTRACES China.

**Decision:** SSC to propose SCOR: (1) Tung-Yuan Ho, Phoebe Lam, Katharina Pahnke, Micha Rijkenberg, Alakendra Roychoudhury and Geraldine Sarthou be renewed for a second 3-year term. (2) Pinghe Cai and Yoshiki Sohrin to rotate off and propose Liping Zhou and Hajime Obata to rotate in.

**Action:** SSC chairs to invite Liping Zhou and Hajime Obata to serve the GEOTRACES SSC.

**Action:** SSC chairs and SCOR to send thank you letters to Yoshiki Sohrin and Pinghe Cai.

**Action:** IPO prepare nominations to SCOR.

#### Data Management Committee – Alessandro Tagliabue and Andy Bowie

Bill Jenkins rotate off. DMC discussed a replacement and propose Bill Landing to rotate in as he would help implement management of aerosol data.

**Decision:** SSC agreed for DMC to invite Bill Landing as new member of the DMC.

**Action:** DMC co-chairs to contact Bill Landing and invite him to serve the DMC.

**Action:** DMC co-chairs to thank Bill Jenkins.

#### Standards and Intercalibration Committee – Maeve Lohan and Greg Cutter

Roger François and Lou Codispoti rotated off last year. Tina van de Flierdt and Karen Casciotti are the two new members replacing them. Michiel Rutgers van der Loeff, Hajime Obata and Per Andersson also rotated off. They have been members of the Committee since its creation.

For future S&I Committee replacements rather than thinking in existing countries or expertise, to focus on new expertise needed such as Hg, stable metal isotopes, U-series radionuclides. SSC has previously set an action item for S&I to invite a representative for Hg intercalibration.

There was a broad SSC agreement on adopting the « two co-chair » model to the S&I. This is also formally stated in the ToR document endorsed by the SSC. Maeve Lohan has been informally acting as co-chair.

**Decision:** Maeve Lohan is appointed as co-chair of the S&I Committee.

[There was also a discussion about when is the best time for Greg Cutter to step down as co-chair of the S&I. Greg has been in the S&I since the beginning. Greg is happy to continue until the release of the IDP2017. There were different views on this issue. Shall he rotate off at the end of the year, after second the 2015 S&I meeting or following the IDP2017 release? No conclusion was reached. Discussion to be continued by e-mail.]

#### Venue for next SSC Meeting – Maite Maldonado

Next meeting will be held in Vancouver, Canada. Since there will be the arctic cruises being held from July 2 (starting with Canada) to October 10 (closing with US cruise). The window to hold the meeting would be rather June or late October/November.

Discussions lead to propose two options: for the meeting to start on 19-23 of October or second option for 26-30 October. Andy noted that he might be on a cruise; he will have the

dates in about a month. Japanese colleagues noted they would have a cruise on October-November. So conclusion was finally reached on the meeting to be held in June<sup>2</sup>.

**Action:** IPO to prepare a budget for hosting the meeting in Vancouver.

**Action:** IPO to set up a doodle poll to query about the 2015 SSC meeting dates.

Meeting adjourned.

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<sup>2</sup> Next SSC meeting will be held on 15-17 July 2015.