GEOTRACES INTERNATIONAL SSC MEETING
BREMERHAVEN, GERMANY
2 – 4 OCTOBER 2013

List of attendees

SSC Members:
Ed Boyle (co-chair)
Reiner Schlitzer (co-chair and host)

Andrew Bowie
Ludmila Demina
Jordi Garcia-Orellana
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
Angela Wagener

Other Participants:
Bob Anderson (Past SSC co-chair)
Hein de Baar (Past SSC member)
Greg Cutter (Standard and Intercalibration Committee chair)
Martin Frank (Past SSC member)
Gideon Henderson (Past SSC co-chair)
Catherine Jeandel (IPO Science Director and past SSC member)
Elena Masferrer (IPO Executive Officer)
Ed Mawji (GEOTRACES Data Manager)
Chris Measures (Data Management Committee co-chair)
Michiel Rutgers van der Loeff (Past SSC member and Standard and Intercalibration Committee member)
Alessandro Tagliabue (Data Management Committee member)
Sunil Kumar Singh (Past SSC member and Data Management Committee member)
Ed Urban (SCOR)
Jing Zhang (Past SSC member and Data Management Committee member)

WEDNESDAY 2 OCTOBER 2013

Opening remarks

Reiner Schlitzer welcomed all SSC members and especially Ludmila Demina, a new member of the SSC.

Address by Prof. Dr. Ralf Tiedemann, Vice-Director of AWI

Prof. Dr. Ralf Tiedemann welcomed meeting participants and introduced the GEOTRACES-related activities at AWI. Major GEOTRACES themes are all implemented in the AWI research program. Therefore, AWI intends to continue its support of GEOTRACES.

AWI has several offices in Germany in different cities.

AWI research is organized under Geosciences, Biosciences and Climate. The strong support for GEOTRACES came from Geoscience and Climate sciences.

AWI also has an interdisciplinary polar programme. Tiedemann described all the themes of the programme: Changing Arctic and Antarctic/Coastal change/Lessons from the past/Synthesis –the earth system from a polar perspective.

AWI was founded in 1980 and has an annual budget of 113M euro. 90% of AWI income is provided by the German Ministry of Education, 8% from State of Bremen, and 1% from other states. AWI is a member of the Helmholtz Association of German Research Centres.

Tiedemann showed a figure of cruises completed (GIPY5 and IPY11) and future plans. Two cruises--TRANSARC-II in 2015 and GRIFF in 2016--will be future contributions of AWI to the Arctic GEOTRACES activities.

Tiedemann showed Reiner Schlitzer's animation of distributions of ^{230}Th in the North Atlantic Ocean as an example of GEOTRACES products from AWI scientists that will be of interest to other communities. He next showed data from Anja Studer ($d^{15}N$) and Edith Maier ($d^{30}Si$) to illustrate changes in the efficiency of the biological pump. GEOTRACES data on N and Si isotopes in the ocean will aid AWI research on paleoproductivity.

Tiedemann announced the construction of a new research vessel, the *RV Polarstern II. RV Polarstern* is more than 30 years old. The new ship will be built in 2016 with the maiden cruise scheduled for 2018/19. He explained the novelties of the new ship, such as having a long piston-coring (60m) device and a moon pool that will allow operation of portable drilling rigs and other operations in the ice.

Discussion:

Several SSC members raised questions and provided advice for the construction of *RV Polarstern II.*

Ralf Tiedemann invited SSC members to send recommendations on how AWI could improve the research vessel.

National Reports

Australia – Andrew Bowie

Andrew Bowie started his presentation by listing the GEOTRACES presentations made by Australian scientists during the past year. This includes presentations at ASLO 2013 and 45th International Liege Colloquium on Ocean Dynamics. A Joint Australia/New Zealand Strategic Science in Antarctica Workshop was also held. Australian scientists participated in the GEOTRACES particle intercalibration workshop led by Phoebe Lam. Bowie then reviewed the cruises completed, which this year included the GEOTRACES Process Study SIPEX. Australian scientists got ship time funded for Heard/McDonald Island submarine hydrothermalism and biospheric Impacts study (60 days in 2014-2015). This could be a possible future GEOTRACES process study. Three other ship time proposals

have been submitted for cruises in 2015/2016 in the Southern Ocean. The Antarctic Climate and Ecosystems CRC was re-funded for $25M over 5 years.

Bowie next described some results from GEOTRACES research: 11 journal articles reporting GEOTRACES activities have been published. Australia has submitted data for the Intermediate Data Product (IDP) from the Australian cruises GIPY2, GIPY3, GIPY6 and GPpr02

The new Australian ship *RV Investigator* is scheduled to be commissioned in early 2014. Marine National Facility equipment funding for GEOTRACES sampling includes a clean laboratory container, trace-metal rosette and in-situ pumps.

New Zealand – Andrew Bowie presented on behalf of Philip Boyd.
In September-October 2012, New Zealand scientists undertook the GEOTRACES process study FeCycle III off the eastern seaboard of the North Island of New Zealand. In April 2013 (?), they held a data workshop on GP13 and also the first data workshop on FeCycle II. In May 2013, Boyd moved to Hobart, Australia. Bowie showed results from GP13 and a list of publications. Michael Ellwood will submit data to GDAC.

Brazil and other Latin American countries – Angela Wagener
There is bad news for Brazil, since Petrobas is withdrawing support from this area of research. However, the Brazilian government announced the creation of a National Institute of Oceanography and Waterways. It will include four research (?) centres. A new ship will be purchased, but Wagener does not have information about whether there will be GEOTRACES-related facilities on the ship. She believes it may be available during the time life of GEOTRACES. Other Brazilian ships also are being renewed.

In terms of individual scientific interests in Brazil, Glaucia Benedetti would like to measure Re, Mo and U on a GEOTRACES cruise. Vanessa Hatje from UFBA is working in Ken Bruland's laboratory.
José Marcus Godoy received water samples from the 2013 GEOTRACES Mediterranean cruises to determine D, $\delta^{18}O$, U, Ba and Mo. Angela Wagener and Ed Boyle have received a 2-year grant from CNPq-MIT for the project "Tracking the historical development of combustion practices (from colonial to modern times) using molecular and isotopic markers in shelf sediments of SE Brazil".

<u>Argentina</u>
Diego Gaiero had a paper published in the *Journal of Geophysical Research* on ground/satellite observations and atmospheric modelling of dusts. He will receive a grant to carry out dust studies in central and south Argentina (satellite, modeling and ground sampling).

<u>Mexico</u>
Evgueni Shumilin reported to Wagener that there is no direct funding for GEOTRACES activities in Mexico. GEOTRACES-related projects obtain financial support from CONACyT, such as a project entitled: "High resolution geochemical reconstructions of recent climate and oxygenation history in La Paz Bay, Gulf of California". Most work is on metals in coastal sediments.

Canada – Maite Maldonado
Many manuscripts have already been published from the 2009 Arctic IPY cruise.

A workshop was held at University British Columbia in May 2012 with the participation of 40 University and governmental scientists. One output from the workshop was the GEOTRACES-CCAR proposal: "Biogeochemical and tracer study of a rapidly changing Arctic Ocean. The proposal was approved and the grant is for $5M for 5 years. The Principal Investigator (PI) is Roger François. The

research will include two cruises in 2015. Two cruises are planned back to back aboard the *RV Amundsen* for 9 weeks, starting in late July:

1. Labrador Sea-CAA cruise (32 berths, 6 weeks) (in collaboration w/ DFO C3O Program).
2. Canada Basin (in collaboration Arctic Net Program) (10 berths, 3 weeks). It will have a crossover station.

Maldonado presented the themes (5) for the project and cruises, as well as the parameters that will be measured:

1. Water mass structure and circulation
2. Essential and Toxic Elements
3. Nutrient distributions, biological production, carbon sequestration and climate-active gas fluxes
4. Biological and chemical consequences of ocean acidification
5. Synthesis and modeling.

The Line P program (3 cruises per year) has been renewed. Canada wants to submit it as a GEOTRACES process study, as was discussed later in the meeting.

Questions:
Gideon Henderson – Will size-fractionated particles and aerosols be included in the measurements?
Maldonado – She believes they are not.

Recommendation: SSC recommends that the Canadian cruises include size-fractionated particles and aerosols, if possible.

China – Ed Boyle presented for Pinghe Cai
A new ship will be available for GEOTRACES work in 2015, from Xiamen University. Chris Measures is helping design the ship and the GEOTRACES-related facilities. It will have a clean sampling system and laboratory. Boyle showed some examples of the research that Chinese scientists are doing, including assessment of submarine groundwater discharge in the northern South China Sea using radium isotopes (Liu et al., 2012, BG); study of exchanges through the sediment-water interface using the $^{224}Ra/^{228}Th$ disequilibrium approach (Cai et al., 2013, GCA); Investigations on POC export in warm-core eddies using $^{234}Th/^{238}U$ disequilibrium in the Pearl River estuary (Zhou et al., 2013, EPSL). In terms of the outlook for the future, a map was showed with future cruise plans. China plans to be involved in four cruises in the Northwest Pacific, some in collaboration with other nations such as Japan and Taiwan.

France – Geraldine Sarthou
Geraldine Sarthou presented a list of the 6 cruises in which French scientists participated this year. French-led cruises completed this year were KEOPS-II (GEOTRACES Process Study) and PANDORA. Sarthou presented some results from these cruises, including

- Radium isotopes off Kerguelen Islands (KEOPS 2 project)
- Marine methylmercury production and marine boundary exchange – results of the 2012 GEOTRACES West Pacific PANDORA cruise
- Physical and remineralization processes govern the cobalt distribution in the deep western Atlantic ocean (GA02).

French scientists participated in 16 conferences, making a total of 37 presentations. They have published 27 papers (14 as first authors). In terms of future plans, 4 French laboratories will

participate in the future particulate intercalibration initiative and the GA01 cruise. They have ship time funded for next May-June 2014, but not funding for the science.
New funding has been awarded for the following GEOTRACES-related projects: BITMAP (Bioavailability of Iron and other Trace MetAls in marine Particles, 480 k€ (12/2012-12/2015, ANR RPDOC, PI Hélène Planquette) and OPTIMISP (Optimization of in situ pumps (ISP), P.I. F. Lacan, in 2012). One bit of bad news from France is that the GEOVIDE (GA01) cruise science proposal will not be funded this year.

Germany – Katharina Pahnke
German GEOTRACES scientists were awarded funding for two cruises: Transarc II (2015) in the Central Arctic Ocean and GRIFF (2016) in Fram Strait. The chief scientists are Michiel Rutgers van der Loeff, Martin Frank and Katharina Pahnke. The cruises will include Dutch and Spanish scientists.
Data for the Intermediate Data Product have been submitted for NE Atlantic (Nd isotopes from GA11) and South Pacific (Nd isotopes) cruises.
Data acquired: Cd, Sr, Ca isotope profiles from the Atlantic cruise and Nd isotopes profiles NW Pacific cruise.
Pahnke showed results from the GEOTRACES Process Study in the Northwest Pacific Ocean.
A trace metal-clean rosette and CTD will be delivered to GEOMAR soon (?), a clean laboratory van is close to being finished, and a winch has been ordered. Eric Achterberg joined GEOMAR in August 2013. Pahnke finished her presentation with a comprehensive list of submitted manuscripts and oral and poster presentations related to German GEOTRACES research.

India – Sunil Kumar Singh
Sunil Singh reported that a new clean sampling system has been installed on an Indian ship. With this new sampling system, Indian scientists undertook the GI03 section cruise in March-May 2013. The ship's dynamic positioning system broke, so they lost much cruise time. They also lost some stations because of a storm. However, the cruise included full water column sampling and some sediment sampling. Indian scientists also undertook another GEOTRACES-related cruise in Hooghly Estuary and the adjacent Bay of Bengal in July 2013. Singh showed some results from the cruises, including the following:

- Spatial variations in hydrographic features in the Indian Ocean
- Mo isotopes in Indian estuaries
- Ba distribution in Bay of Bengal
- Mo isotopes in the northern Indian Ocean.

The India GEOTRACES community is planning a cruise (GI02) in the Arabian Sea in Feb.-March 2014, but the plans have not yet been finalized.

Question:
Were the complete list GEOTRACES key parameters measured during GI03 cruise? Singh responded that the full list of GEOTRACES key parameters were measured.

Japan – Yoshiki Sohrin
The Japanese National GEOTRACES subcommittee met in March. The community organized GEOTRACES-relevant special sessions at the 2013 Asia Oceania Geosciences Society Annual Meeting (AOGS2013) and the Annual Meeting of Geosciences Society of Japan's 2013 meeting. Japan has a new research vessel for GEOTRACES work, the *RV Shinsei Maru*, as the *RV Tanse Maru* was retired at the end of January 2012. The *Shinsei Maru* is equipped with Kevlar-armoured cable and a clean container lab. It can carry 15 scientists. In terms of future plans, Japanese scientists plan to undertake sections GP10, GP18 and GP19 from 2 December 2014 to February 2015 (PI Toshi Gamo,

cruise KH-14-10). In addition, Jing Zhang plans to occupy the section GP06 in 2016 or 2017. Sohrin showed some results from Cu isotopes.
Question:
What will be the spatial sampling resolution for the KH-14-10 cruise? Sohrin answered that they are not sure yet, but it will probably be every 5 or 10 degrees.

Recommendation: SSC recommends that the Japanese cruise KH-14-10 along GEOTRACES sections GP18-GP10-GP19 have a resolution of 5 degrees, as the GEOTRACES sampling at 5 degree resolution has shown that some features would be difficult to characterize at further spacing.

The Netherlands – Micha Rijkenberg
Their work in 2012/2013 focused on the following:

1. further compilation and analysis of the western Atlantic data collected between 2010 and 2012;
2. completion of the first field season on Rothera; and
3. preparation for and execution of three research cruises with the NIOZ *RV Pelagia* in the Mediterranean and Black seas, coinciding with a cruise of the Spanish Mediterranean GEOTRACES program.

Rijkenberg showed scientific results that included 3-D plots of dFe in the North Atlantic and Cd in the South Atlantic, world ocean simulation modeling of Al by Marco van Huelten, compared to Rob Middag's data, and dissolved Fe in Marguerite Baai, Rothera.

Rijkenberg showed the cruise track and stations for the Mediterranean and Black sea cruises, as well as some results of preliminary DFe data from the Mediterranean Sea and profiles of two full-depth stations of DFe and sulphide in the Black Sea.

Questions:
Was there a crossover station? Yes, there was a crossover station.
Bob Anderson - Was there a reoccupation of the GA03 station off Portugal? Rijkenberg answered "No".

Russia – Ludmila Demina
Ludmila presented information about Russian GEOTRACES-relevant research, which includes the following studies:

- Contribution of aerosols to the trace element sedimentation, including the ice and snow cover, lichens (V. Lukashin, V. Shevchenko, A. Klyuvitkin)
- Role of geochemical processes at the river – sea boundaries in the trace element fate in the ocean (V. Gordeev)
- Trace elements and their speciation in bottom sediments, paleoindicators of sedimentation environments (V. Gordeev, V. Lukashin, L. Demina, E. Novichkova)
- Trace element biogeochemistry in deep-sea hydrothermal vent fields (L. Demina, S. Galkin)
- Trace elements and carbon cycles: SPM, vertical fluxes, bioaccumulation (L. Demina, A. Dubinin, M. Kravchishina, A. Lein, V. Lukashin, A. Novigatsky).

Demina then reviewed major results from main Russian researchers. They are not sampling in the open ocean due to the lack of clean sampling systems, but are working in marginal seas to sample trace elements and isotopes (TEIs) and particles. She finished by showing a slide of GEOTRACES-related publications by Russian scientists.

Question:
Has funding been approved yet for the Arctic GEOTRACES cruise by Russian scientists? Demina responded that they do not know about their funding yet. They hope to learn about the funding status at the beginning of 2014.

South Africa –Alakendra Roychoudhury
South African scientists now have access to a new clean lab. They also have two clean container laboratories, one of which is devoted to sampling GO-FLO bottles under positive laminar flow air. They are using a rosette that is a SeaBird coated Al frame with GO-FLO bottles. During the D357 cruise in the South Atlantic Ocean, they made a crossover station. Roychoudhury showed a cruise track. There were 2 stations missing for contamination. The South African data agreed with the French data for the crossover station, but not with the UK data. They did sampling from a towed fish on a transect southwest of South Africa until the fish was lost. Roychoudhury showed some preliminary results from the SOSCEx cruise that was studying light and Fe limitation. He also showed a list of publications (7) and presentations in conferences (2) related to GEOTRACES work by South African scientists. Two proposals have been funded by the South African National Research Foundation (NRF). They have also submitted another proposal to NRF and one to the U.S. National Science Foundation for collaborative work with Phoebe Lam. Susanne Fietz joined the group at Stellenbosch University; she has expertise in paleoceanography. Two South African students were trained with Maeve Lohan and are part of the research group.

Spain – Jordi Garcia-Orellana
The Spanish GEOTRACES Committee has 4 members and Garcia-Orellana has talked with several biologists, who are willing to be involved in the programme. Garcia-Orellana listed the meetings in which Spanish investigators have participated: the GEOTRACES Latin American Workshop, the Workshop on Voltammetry and GEOTRACES, a meeting held at ETH-Zurich in March 2013 to coordinate U-236 studies and the Arctic GEOTRACES Meeting held in Bremerhaven in April 2012. Spanish researchers have also participated in GEOTRACES sessions that have been part of international conferences: OSM, ASLO, Goldschmidt, etc. Future expeditions include the participation of Spanish researchers in the GP16 and GA01 cruises. They also participated in the Fukushima expedition, to measure for ^{90}Sr. Spain conducted a Mediterranean cruise this year. Two stations needed to be skipped due to problems with the Turkish authorities. On these cruises were sampled ^{231}Pa/^{230}Th, ^{236}U, ^{238}U, Pu isotopes, ^{137}Cs, ^{90}Sr, ^{129}I, ^{234}Th, ^{237}Np, ^{228,226}Ra, Nd isotopes and Deuterium. Scientists participating in the cruises also carried out some experiments on ^{210}Pb and ^{210}Po using several techniques. They also deployed an ISP (6) to collect particles. Spanish scientists such as Patrizia Ziveri are interested in BioGEOTRACES.
Garcia-Orellana showed some results, such as a first transect of ^{236}U in the North Atlantic Ocean, submarine groundwater discharge studied with ^{228}Ra into the entire Mediterranean Sea, and submarine groundwater discharge as a source of nutrients and trace metals in a Mediterranean Bay.

Comment:
Ed Boyle noted that he had trace element data from the 1980's (Cu, Ni, Cd, Zn Ba, Pb, Pb isotopes) that would be relevant for the Spanish group to compare with as there may have been large changes for some of these (e.g. Pb).

Sweden – David Turner
David Turner reported the bad news from Sweden that there has been funding shortfall for the *Oden* in 2015. The ship is available but they do not have the money for research. They need 1M€. Swedish scientists participated in both the GEOTRACES Russian Workshop and the GEOTRACES Arctic Workshop held in Vancouver (Canada). They also presented GEOTRACES at the Arctic Council meeting in Stockholm. A new project has been developed, called "Particle transport derived from

isotope tracers and its impact on ocean biogeochemistry: A GEOTRACES project in the Arctic Ocean". A joint French-Swedish project has been developed to study particle transport in the Arctic Ocean (Per Andersson and Mathieu Roy-Barman). This is funded by a three-year grant, including two PhD-students, with about 112 k€ for each institution. The funding starts in 2013. Sweden hosted the Standard and Intercalibration Committee Meeting in Stockholm in May 2013. Sweden has also funded two new projects, which will develop chemical speciation modeling relevant to GEOTRACES, with a major focus on metal-organic complexation:

1. OCEAN CERTAIN (EU-FP7): Ocean Food web Patrol – Climate Effects: Reducing Targeted Uncertainties with an Integrated Network. ca. 300 k€ for speciation modeling, starting November 2013
2. Commercial shipping as a source of acidification in the Baltic Sea (Swedish funding), ca. 200 k€ for speciation modeling, starting July 2013.

Questions:
Bob Anderson - Is there a deadline to get the funding for the *Oden* 2015 cruise?
David Turner - Financing for the *Oden* needs to be in place 12 months before the cruise (Spring 2014).

Taiwan – Tung-Yuan Ho
A new research vessel launched by Taiwan. With the launch of the new research vessel they can extend the research to the east in the open ocean. Taiwanese scientists made a cruise in July to test the sampling systems. All seem to be functional, but sampling capabilities are currently limited because they have only 3000 m of wire. The clean van and GO-FLO bottles are ok. A test cruise involved 12 labs, including four from China and Hong Kong. An inter-comparison was done between this cruise and a Japanese cruise. There was some deviation, but none that seem to be systematic errors. Ho showed some results from the cruise. The second test cruise will be done in March 2014 for 10 days. New researchers and a post-doc joined the group at Ho's institution. Taiwanese scientists have urged the Taiwan Ocean Research Institute (TORI) to purchase a new trace metal-clean sampling system and it probably will be received in 2014 (winch, hydrowire, rosette). Taiwanese scientists are considering organizing another Asia GEOTRACES workshop next year.

Questions:
Chris Measures – Is there an issue about releasing data to the GDAC?
Tung-Yuan Ho - No, there is no issue. The data can be sent directly to BODC.

United States - Bob Anderson
Bob Anderson presented the major events in the U.S. GEOTRACES community in the past year:

- The management proposal to NSF for Arctic GEOTRACES cruises was declined. A new proposal was submitted and a decision is expected by December 2013.
- A Cruise GA03 data synthesis workshop was held in March 2013. Workshop participants decided to submit manuscripts to *Deep-Sea Research-II.*
- Several manuscripts were published in *Limnology and Oceanography: Methods* from the U.S. - led GEOTRACES intercalibration work.
- A Pacific GP16 cruise logistics workshop was held in April 2013.
- The Chemical Oceanography Gordon Conference in August 2013 included two GEOTRACES-specific sessions and several GEOTRACES-related talks and posters. It was very good to feature GEOTRACES research, especially to other communities.
- The U.S. Pacific cruise (GP16) will be conducted in October-December 2013.

Anderson showed examples of data from the GA03, such as using a multi-TEI approach to constrain the source of dissolved Fe off northwest Africa. He also showed the planned track for the US Pacific

cruise GP16 and a proposed cruise track for the Arctic cruise in 2015. The U.S. long-range plans (contingent on funding) include GP15 in 2017 and GP17 in 2019.
Don Rice is planning to retire so Bob is concerned about what may happen after his retirement.
Anderson finished by showing a list of U.S. publications during the past year.

United Kingdom – Maeve Lohan
Maeve Lohan presented the list of meetings attended by UK GEOTRACES scientists, which included ASLO 2013, Goldschmidt 2013, the GA10 Data synthesis meeting (Oxford, UK), the GA06 data synthesis meeting (NOC, UK), the GEOTRACES Particle intercomparison workshop led by Pheobe Lam (Hawaii, USA) and the COCA Meeting (Hawaii, USA). Five journal articles reporting GEOTRACES results have been accepted or published, and 6 more have been submitted. UK scientists received funding for the GEOTRACES Process Study "Shelf Sea Iron Biogeochemistry", which will include 6 cruises in 2014. Alessandro Tagliabue submitted a proposal to NERC on "The Ferricline: Master Variable Controlling the Extent of Iron Limitation?". The decision on the proposal is expected by the end of 2013. Carol Robinson plans to resubmit in January 2014 the proposal for a UK Arctic cruise in 2016. Lohan presented some results from the GA10 cruise related to the correlation between Zn and Si.

Action: Maeve to send the Shelf-Sea Process Study cruise information to the IPO as soon as available.

Other nations?
Gideon - The COST project has been completed, so he has received no news recently from East European nations that formerly participated in COST.
Maeve – She and David Turner submitted a new proposal for COST funding, but it was declined.
Reiner asked if Horizon2020 could be a possibility for funding. Catherine and Elena have reviewed the forthcoming calls and seems that there is no opportunity for GEOTRACES. They also summarized the EU funding possibilities and the work done in the past. They also explained that on a result of their contact to the European Marine Board, GEOTRACES is included in its Navigating for Future IV Position Paper.
Gideon reminded meeting participants that the conclusion at the 2012 SSC meeting was that the emphasis should be to seek national contributions rather than going after European funding. He mentioned that emphasis should be put in ERC calls for proposals. Alessandro Tagliabue responded that he is willing to submit an ERC grant.

Israel
Bob mentioned that Adi Torstein is trying to set up a time series aerosol study in the Gulf of Aqaba.

BioGEOTRACES – Maite Maldonado
What should be the scope of BioGEOTRACES activities? They have identified three activities that are not represented in the GEOTRACES web site. There is a need to update it. The three categories reflecting how samples were collected include the following:

1. BioGEOTRACES Global Survey: Sampling on as many GEOTRACES legs as possible by the Chisholm (MIT) LaRoche (Dalhousie) & Herndl (Vienna) labs.
2. BioGEOTRACES in National legs: Regional sampling and experiments on national GEOTRACES voyages.
3. Process Studies in BioGEOTRACES (Sampling and experiments as part of recognised GEOTRACES process studies for example FeCycle II and Line P)

Maldonado showed some examples from the three options. Gideon explained that historically option a) has been followed as this is the one with international scope.

Recording/Updating BioGEOTRACES Activities: Maldonado tried to contact the three labs mentioned above to ask them to send updates on their activities. She had problems reaching LaRoche. The Chisholm lab had no activities because of funding problems. The Herndl lab analysed samples from Dutch and UK GEOTRACES cruises on 2010-2011.

Maldonado maintains an Excel sheet of all people who collected BioGEOTRACES samples, so they can be acknowledged, and also which samples were collected. She is having a hard time getting responses for some cruises.

In terms of making BioGEOTRACES more effective, Philip Boyd proposed identifying national representatives for BioGEOTRACES. A list of possible national representatives was shown. There was discussion about whether the GEOTRACES SSC wants to use this approach. Gideon raised concerns about the expansion of the GEOTRACES purview to cover research areas that are outside of the goals laid out in the *GEOTRACES Science Plan*. The GEOTRACES Data Assembly Center is at about maximum capacity and adding data management for BioGEOTRACES would be prohibitive. Bob agreed with Gideon. Alessandro argued that BioGEOTRACES-type results are critical to the understanding of the biogeochemical cycles of TEIs, especially Fe. But he agreed that the work falls outside the scope of GEOTRACES. Maite made the comment that the GEOTRACES web site should contain more information about BioGEOTRACES activities so that people who are interested in GEOTRACES and biology can find relevant information, even if BioGEOTRACES is not fully part of GEOTRACES.

Maldonado presented a list of parameters discussed during last SSC meeting that would be managed by GDAC:

- Macronutrients, chlorophyll, & PAR
- flow cytometry (bacteria abundance, autotrophs and heterotrophs).
- HPLC pigments (~ 21, for phytoplankton species composition).
- DNA abundance of different ecotypes (functional genes, e.g., Nif gene)

Other parameters are useful for modelers, but they are more difficult to make routinely, so they are optional:

- Rate measurements: Primary & secondary productivity.
- Trace metal transport kinetics (half-saturation constants & maximum rates of uptake/growth.
- Trace metal uptake ratios.

How should GEOTRACES communicate with BioGEOTRACES researchers? Using a mailing list? Should they be sent instructions to submit data that GEOTRACES will manage? Via special forms? Or should they use the forms already on the web (ROSCOP/CSR & the GDAC pre-cruise metadata form)?

Maldonado showed a list of items she would like to see included in the web site page related to BioGEOTRACES:

- Contact information needs to be regularly updated.
- Incorporate a summary of the three types of activities similar to the list at BODC.
- Include an interactive map for BioGEOTRACES activities?

Discussion:
Reiner asked how BioGEOTRACES activities should be integrated into the GEOTRACES web site? The GEOTRACES community and the IPO may lack the knowledge and capacity to represent BioGEOTRACES. Has the BioGEOTRACES community thought about setting up its own web site? The IPO and GDAC may not be able to handle the extra load. Do the BioGEOTRACES scientists

want the IPO to handle those responsibilities? Hein noted that there is a lot of activity on metal-biota interaction that would be of interest to have linked to the GEOTRACES web site. But, incorporation of such information into the web site and database has lagged behind. Gideon supported changing the BioGEOTRACES page on the web site to include more of the related work. But, he is uncomfortable branding it as part of GEOTRACES. How far do we stretch the program? Instead, Gideon suggested that we add a page that describes the interactions of TEIs with biology, of which BioGEOTRACES would be one aspect. Chris reiterated the point that how GEOTRACES deals with BioGEOTRACES would bring major implications for data management. BODC is not set up to handle all of this. GDAC is already having trouble handling the existing data. Reiner Schlitzer added that we are trying to find the boundary between IPO and GDAC responsibilities and what falls outside. We should reflect that we are collaborating with the BioGEOTRACES community, but not incorporating them into GEOTRACES.

Hein asked if a few core parameters could be defined that would be provided by BioGEOTRACES and are essential for GEOTRACES goals? Reiner answered that there is a partial list already. And it is clear that GDAC would be overwhelmed trying to organize these diverse sets of parameters. Ed Mawji clarified that BODC has expertise in these kinds of data, but he doesn't. He doesn't have the time or expertise to handle the extra data. Maite suggested, as an alternative, that the web site at least gives links to the relevant people involved in BioGEOTRACES data. Reiner added that if data are entering the system with no need for GDAC to chase the data, this would save a lot of work. Gideon added that if these data are going to be in the database, it needs to be communicated very clearly that the data are not intercalibrated like other GEOTRACES data in the database.

Reiner noted that the following item in the agenda is relevant for this discussion and that the discussion would be re-opened after Bob Anderson's presentation after lunch.

Afternoon:

Global-scale Microbial Interactions across Chemical Surveys (GEOMICS) U.S. Pilot Study – Bob Anderson

The history of the GEOMICS project started in GEOTRACES when members of the SSC started an NSF/OCB-sponsored workshop to advance the field of research related to BioGEOTRACES. A cruise was funded to study mainly biology related to trace element cycling, but some U.S. GEOTRACES scientists also participated in the cruise (Greg Cutter, James Moffett). The resulting database mainly contains organic biomarker compounds and genomics data.

One important message is that the amount of data required GEOMICS to hire two computer specialists to handle the data. Using GEOTRACES data, they are obtaining very exciting results and this is a proof of concept for BioGEOTRACES. However, Anderson stated that this is out of the scope of GEOTRACES with the current human resources available to the project, especially taking into account that there are already discussions of GEOTRACES parameters that are not going to be in the IDP as GDAC cannot handle them.

Discussion:

How we can support these emerging fields without overwhelming GDAC and the IPO? Perhaps we should help these communities to organize and maintain good communication mechanism with them, but not incorporate them into GEOTRACES. Maite recognized that there are a lot of people working in genomics, but the parameters that BioGEOTRACES have proposed to be included in GDAC are only a few. Bob asked whether the limited set of parameters is useful for a substantial group of oceanographers without the other genomics data associated? The answer was "yes" and Maite proposed to reduce the list. Maeve added that, in the future, after the IDP is completed, it will be valuable to have those parameters in GDAC. Reiner responded that the BioGEOTRACES community

should facilitate data submission and not have Ed M chasing data. Gideon supported having the parameters in GDAC, but they need to be flagged as not being intercalibrated.

How should BioGEOTRACES data be presented on the GEOTRACES web sites? A consensus was reached to have a searchable inventory that could be maintained on the GEOTRACES web site and which would allow searches for specific parameters and links to the contact person.

Action: Elena and Maite to update the GEOTRACES web site as follows:

- Re-label the existing BioGEOTRACES page as "Biological parameters".
- Include a section on BioGEOTRACES, as at present describing the three specific BioGEOTRACES projects. Add a section, written by Maite, that says that biology is important and that many cruises have biological measurements.
- List Maite as only contact on this page

Action: Ed Mawji and Maite to assess what biological data can be included in GDAC in the long term.

- Provisionally only pigments, and not functional genes or flow cytometry data.
- Then accept pigment data (but encourage people to submit it without requiring chasing).
- Label data as "not intercalibrated" on GDAC.

Action: (As time allows) Maite to contact GEOTRACES cruise PIs to get short summaries of any biological measurements made on GEOTRACES cruises and send them to Ed M.

Action: (As time allows) Ed Mawji to add summary information about biological data to cruises on GDAC. This will consist of a link for each cruise with a short summary of any biological measurements made on that cruise.

Action: (As time allows) Maite, Ed Mawji and Elena to design a system to allow people to search for terms such as "N2 fixation" to find which cruises have done which biological measurements. This could be extended to non-biological measurements as well (physics, atmospheric, etc.). To be clear, there is no suggestion to accept or store data for these parameters, only that a website visitor can find the names and locations of cruises that have made each measurement.

International Project Office – Elena Masferrer and Catherine Jeandel

Elena started her presentation reviewing the IPO responsibilities. In connection to these tasks several products have been developed. These are of two types:

1. Outreach products (Web site, mailing lists, brochure, poster, eNewsletter, Facebook page, outreach resources library) and
2. Databases (Analytical expertise, Peer reviewed papers, PhD and Masters dissertations).

Action: Elena to add a link to the Analytical Expertise database under the "Quick links".

The Joomla content management system used for the web site was upgraded last year, as it arrived to the end of the security-supporting period. This required a lot of Elena's time. New features of the web site include the following:

- Improvement of the access level control (it is now possible to limit access to a page to a specific group of users - example, private forums);
- Link to Facebook;
- New system to archive news items that is more easily searchable;
- Archive to old eNewsletters;

- New link verifying system (Elena does a search every month to identify and repair broken links); and
- A national and regional interactive map available on the web site.

Action: Elena to add a zoom or a clickable list of nations to make it easier to find small nations in the interactive map available on the GEOTRACES web site..

Science highlights - working well but need more.
Elena wants more information about national events - for calendar and under New Items.

Action: SSC members to send science highlights to the IPO.

Action: SSC members to send information about national events to the IPO (especially about national workshops and meetings). Information can be sent by a simple e-mail with the meeting title, dates and location. (Other information such agenda and list of participants is also welcome).

Site visits: 18.330 visitors (50 visits/day) – 8.546 unique visitors. 800 individuals subscribe to the email list, from 40 nations. Elena tracks the percentage of messages opened. An average of 30% of announcement messages are opened, but up to 40% for eNewsletters. Four issues of eNewsletters have been published.

A new page with outreach material has gone public; it accompanies the web page that offers outreach material to SSC members.

Action: SSC members to send material to the IPO for the public outreach page and also for material for the SSC resource web page (educational materials, lectures, presentations, etc.).

Researcher database is online with 112 researchers identified. The S&I Committee validates each expert before they are posted on the site.

Action: SSC members to encourage investigators in their nation to register to the GEOTRACES Researchers Analytical Expertise database.

Publications: 228 plus 15 PhD dissertations.

To improve searchability within Mendeley's database, there is a Mendeley desktop app available to download for free (www.mendeley.com). This app makes it easier to access publications (journal web sites) and to organize publications.

Action: Elena to put the instructions on how to download and use the Mendeley Desktop on the GEOTRACES site. Send the URL (link) to SSC members when the instructions are posted.

The IPO supported three meetings in the past year: the SSC meeting in Goa, the Latin America regional meeting and the meeting in Russia to discuss Russian contributions to GEOTRACES science in the Arctic Ocean.
Contributions to the IPO from the United States, France, Germany (AWI and GEOMAR), and NIOZ continue.

Discussion:
Advertisement of GEOTRACES at International Conferences:
Catherine explained that this is an idea she had at the Goldschmidt Conference. The idea is to produce a single PowerPoint slide that anyone can insert into their talks to advertise GEOTRACES. The IPO will send it to conveners to show at the beginning or the end of a session, where this is allowed. An

example of this slide has been produced by the IPO and it is presented. In general, all SSC members agreed and approved the slide.

Action: Elena to replace "competence" for "expertise" in the slide to be sent to convenors.

Action: Elena to send the slide advertising the programme to all convenors of GEOTRACES special sessions at international conferences.

Library of images: The IPO needs images and videos to be placed on the site, as discussed during previous SSC meetings.

Action: SSC members to submit images and videos to be placed on the web site. Cruise photos. Data sections. Even better, results showing impact for other fields of having knowledge of TEI biogeochemistry. Include a caption if appropriate. Provide credits for photographers and approval for general use in the image so there are no after-the-fact questions about copyright.

Social Media:
Should we have a Twitter account? It seems so far that there is no need for the IPO to create such an account. GEOTRACES does have a Facebook page. Catherine suggested putting more photographs on the Facebook page to attract visitors.

Angela Wagener suggested that we add educational material to the web site for students, mainly undergraduates, but it could be also secondary school. There was a lot of support for this idea among SSC members. Alessandro added that he has a proposal pending to make animations showing how the science is done, and to show how iron data are interpreted and the implications for broader issues of concern (e.g., ecosystem health).

Outreach and Publicity

Bob advocated for giving talks to other communities of oceanographers, and even in other fields. Two previous experiences (11th International Conference on Paleoceanography and the Chemical Oceanography Gordon Research Conference) gave him very positive feedback in terms of people from other communities being interested in GEOTRACES. He believes it is very positive for the GEOTRACES programme in terms of visibility and also for getting general support for the programme.

Ed Urban mentioned that SCOR would have a booth at Ocean Sciences 2014. We will need people to staff it. A sign-up sheet for volunteers is set-up. Bob reminded all SSC members that it is essential to inform the IPO of talks done in other programmes if in the future we need to develop relationship with other programmes.

Action: SSC members to inform the IPO of presentations done in other programmes or international conferences or institutions.

GEOTRACES Publications

Synthesis of IPY Activities – Hein de Baar and Andy Bowie
Hein reported that this task has been pending for three years, but he and Andy have had no time to undertake it. He suggested preparing a paper synthesizing all of the available Fe sections from the Southern Ocean that could be built with an existing thesis chapter (Martin Klunder). This could be done and submitted fairly soon. Greg asked whether this would be only for iron or would be a synthesis of IPY data? Hein responded that a synthesis of all GEOTRACES IPY data is beyond the

scope of a manageable project. Bob added that he believes it is valuable for GEOTRACES to have a first step, even if only for a single element. He thinks it will be well received. There was general agreement among SSC members.

Action: Hein and Andy to update the thesis chapter with some new data (unless they decide that the information is not sufficiently new) and submit the paper.

International Year of Planet Earth (IYPE) – Bob Anderson

In 2009, Bob Anderson was asked to write an overview of GEOTRACES for the International Year of Planet Earth (IYPE) publication. He did not hear from the editor until 2011 when he was asked to update the document, a task that he undertook with the help of several SSC members. The book is announced on Internet, but he has no news from the editor, so he believes it will never be published. Last spring, there was call for special issue of *Oceanography* magazine. Bob was asked to write a synthesis of GEOTRACES and with a few volunteers they updated the IYPE paper and it was submitted to *Oceanography*. If any SSC volunteers to review it and become co-authors is welcomed to step in. So far, authors are Bob, Ed Mawji, Greg Cutter, Catherine Jeandel and Chris Measures. Bob is convinced that a document describing how GEOTRACES was constructed will be very useful for other communities.

2011 Data-Model Workshop White Paper – Catherine Jeandel

The output from the 2011 Data-Model Synergy workshop is mostly ready and the authors are almost ready to submit it to a journal. It will no longer be a white paper. It will be submitted to *Progress in Oceanography* as special volume of 7 papers. Catherine and Phoebe Lam are working together on the special issue. Catherine reviewed the 7 papers:

1. Motivation. – Bob Anderson is in charge of it.
2. Historical review – Catherine Jeandel is leading it.
3. Summarise techniques for collecting particles – Andrew McDonnell. It is finished
4. Summarise the technique for characterizing particles –It is finished.
5. Methods for analysing particles - Phoebe Lam - It is finished.
6. Modelling – Split into two parts.
7. Questions and recommendations – Gideon Henderson. Almost done.

The papers will be submitted as soon as the introduction and the conclusions are completed.

Ed Urban reminded SSC members that when a publication is related to work funded through NSF support, authors should contact him to obtain the NSF grant number to be included in the acknowledgements. It is important in SCOR's annual reports to NSF that it can be demonstrated that GEOTRACES SSC publications are acknowledging NSF support.

Action: SSC members to contact Ed Urban to get the NSF grant number to include it in the acknowledgements of publications funded by NSF support to the GEOTRACES SSC, its subcommittees, GDAC, and the IPO.

Action: Ed Urban to provide NSF grant number to Catherine so that it could be included in the acknowledgements of the Data-Model Workshop paper. Also send it to Bob to be included in the *Oceanography* paper.

Gideon – The COST funding should be also mentioned.

Action: Gideon to send a sentence to Catherine regarding the COST funding to be added to the Data-Model Workshop papers.

International Partnership Issues

Report on progress of SCOR WG139 - Maeve Lohan
A second meeting of the working group was held in New Orleans in February 2013. There is a web site with all the talks and minutes (http://neon.otago.ac.nz/research/scor/index.html). Lohan presented the motivation and membership of the group. Group members performed an intercalibration exercise on titration data and automated products, based on simulated data and the results are being analyzed.

The working group is preparing a special issue of the journal *Marine Chemistry*.

Last year at the ASLO meeting there were several talks showing progress on identifying more ligand compounds as more powerful techniques are becoming common.

The next meeting of the working group will be in conjunction with the Ocean Sciences meeting in Hawaii, in February 2014.

Question: Reiner asked what is the life of the Working Group? It has been going on for two years and is allowed up to four years to complete its approved tasks.

Future Earth – Ed Urban
The aim of the Future Earth initiative is to produce more science that is relevant to policy, and to involve stakeholders more in determining scientific directions. Future Earth will initially be a reorganization and combination of three of ICSU's Global Environmental Change (GEC) programmes: The International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions of Global Change Programme (IHDP), and Diversitas. The World Climate Research Programme (WCRP) will be affiliated with, but not part of Future Earth because they are funded by WMO and WMO did not want to relinquish its authority. Future Earth has invited all projects of the three GEC programmes to become sponsored by Future Earth. A model Memorandum of Understanding is being developed to govern the new sponsorship arrangements.. SCOR-sponsored projects that have been approached include SOLAS and IMBER. They are both considering whether to invite Future Earth as co-sponsors. There are costs and benefits to the involvement.

Urban showed the structure of Future Earth. The Governing Council will have two advisory bodies, the Engagement Committee (will work with stakeholders) and the Science Committee. The three major components of the Future Earth initiative are Dynamic Planet, Global Development, and Transition and global sustainability. In the initial development, there was no mention of fundamental sciences. Programme planners were hearing from the scientific community that fundamental science should be included, and Future Earth documents now mention fundamental science and see it primarily contributing to the Dynamic Planet theme.

Urban showed a slide of the Future Earth Science Committee membership. Only one oceanographer is included, Corinne Le Quere. The other members are mostly terrestrial or social scientists.

Bob noted that he attended a Town Hall session about Future Earth at an AGU meeting. The representative of Future Earth said there will not be fundamental science included and that all will be engineering and technology. So, Bob believes Future Earth is not of use for GEOTRACES.

The period for requests for bids for hosting the Future Earth Secretariat have just closed.

SCOR is taking a "wait and see" approach to engagement with Future Earth to see how it develops and what would be the costs and benefits to SCOR.

Questions:
Martin Frank– How will Future Earth will be funded?
Urban - It will count on continuation of the already existing sources (IGBP, etc) and is expecting that some additional governmental and private funding will also be available.

Geochemical Society – Catherine Jeandel
Catherine has been elected member of the Geochemical Society Board. The Geochemical Society co-organizes the Goldschmidt Conferences when it happens in Europe and collaborates in some publications (*Geochemical News*, *Elements Magazine*, CGA, etc.). At the latest meeting, Catherine asked to know how many oceanographers were in the Geochemical Society and was shown that they are less than 4% of the membership (150 of 4200 members). She believes that it is easy to increase this number. The Geochemical Society's budget is very huge. Catherine suggested that GEOTRACES could bring them more new members and publicity, for example, organizing sessions at Goldschmidt conferences, in exchange for a contribution for the IPO and GDAC. Most of the SSC members are already members of the Geochemical Society.

Martin commented that some GEOTRACES scientists might not be registered as oceanographers. For example, the group "radiogenic isotope geochemists" may include many GEOTRACES scientists. Ed Boyle noted that *Elements Magazine* is a great teaching aid. A GEOTRACES-related research issue could be suggested. Gideon said that *Elements Magazine* probably wouldn't do an issue devoted to a single program, but that it could do an issue on the research themes in GEOTRACES that would allow the possibility of related research from non-GEOTRACES research.

Action: IPO to send an email to the GEOTRACES mailing list inviting scientists to become members of the Geochemical Society.

Action: SSC members to consider participating to the forthcoming Goldschmidt Conference in California in June 2014.

Action: Catherine to contact the Geochemical Society to suggest a volume of *Elements Magazine* on the research themes in GEOTRACES.

Paleo-GEOTRACES and IMAGES2 – Bob Anderson
Bob Anderson participated in the 11th International Conference in Paleoceanography (ICP). Before his presentation, some people who are organizing IMAGES2 mentioned the possibility to organize a paleo-GEOTRACES project. The fact that other communities want to emulate GEOTRACES shows how successful GEOTRACES is and means that other communities recognise that success and see the benefits of the programme. Later in the meeting there was another presentation about creating IMAGES2 and they suggested that may be it could be a partnership with GEOTRACES or be built following the GEOTRACES structure. Bob participated later to an IMAGES2 Workshop as well. He does not think GEOTRACES should make a partnership with IMAGES2, in order to keep GEOTRACES focused, but he believes that this is a good example that is worth to publicize GEOTRACES to other communities since if other communities see the value and want to emulate GEOTRACES this helps GEOTRACES, especially to obtain funding.

Questions:
Olivier Marchal pointed out that GEOTRACES should keep an eye in the field of sediments collecting. He believes there is a relationship with sediment proxies (paleo) and water proxies and this should be considered. Maybe this can be done in the context of process studies. Bob noted that there is already growing effort to collect sediment cores, in existing GEOTRACES cruises (for example, Indian and Dutch cruises). Bob asked whether anyone know if IMAGES2 has a separate activity on paleo-proxy intercalibration? Bob noted that he had already mentioned in some past SSC meetings about the importance of activity in the bottom of the water column and the relation with the sediments.

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Reiner reviewed the agenda for the day. He then started reviewing the Intermediate Data Product (IDP) history and motivations, which include demonstrating GEOTRACES productivity and fostering integrative large-scale research on biogeochemical cycles. Reiner reviewed the IDP timeline and mentioned that the data submitted to the S&I Committee will be protected until the release of the IDP. After this the data will be public. Reiner described the IDP. It will have a very extended documentation of data generators and original papers. The IDP will also be published as a citable product with a digital object identifier assigned. As Reiner's personal contribution, he would like to produce an eGEOTRACES gallery (similar to eWOCE). Sections will be linked to a map with all sections. When a section is selected a drop-down menu will appear. When selecting a parameter, a plot of the section will be shown. Reiner stressed the idea that the original plan was that the IDP would consist of two components: (1) the digital data and (2) the visual components (interactive maps and a selection of 3-D images), not merely the latter.

Action: Reiner to make sure that the sample locations are visible in the eGEOTRACES gallery plots.

Standards and Intercalibration - Greg Cutter

Update status of main activity

Greg first presented the S&I Committee membership. Members have been working together for 5 years. He then reviewed major activity of the past year, which has been to review data related to the Atlantic crossover stations in preparation for the 2014 IDP. A committee meeting was held in Stockholm, Sweden on 1-3 May 2013 and the work was continued just prior to the SSC meeting. Greg stressed that the committee shared responses only with the PIs for specific TEIs; no one else saw the data. Greg sent e-mails to notify PIs of the results of the evaluations and responses were requested by 30 August 2013.

The focus of the pre-SSC meeting of the committee was to review the data again and decide which will be included in the IDP. The S&I Committee is also reviewing the Cookbook. Greg summarized what it is in the Cookbook:

1. Use GEOTRACES protocols for accurate sample acquisition and handling.
2. If possible, occupy a baseline or crossover station during the cruise.
3. If a Baseline or Crossover Station is not occupied, at 2 stations and 3 depths per station, it is strongly recommended to acquire replicate samples for distribution to various labs to evaluate sample storage and analytical accuracy.
4. Use appropriate reference materials during analyses (e.g., SAFe and GEOTRACES intercalibration samples).
5. Both cruises should share results from Baseline and Crossover stations as soon as possible to verify accurate results and intercalibrate; submit metadata and results to S&I Committee for evaluation.

A problem has arisen in that PIs do not share and verify results from crossover stations with PIs from the other appropriate crossover cruises. The S&I Committee does not want to be the first to look at the data. It would be better for the PIs to discover and fix any discrepancies. Ed Mawji noted that it was agreed in the last SSC, that the GDAC would provide contact details of PIs in crossover stations, which Ed can figure out when he receives the pre-cruise metadata. Ideally, these metadata data should be received before the cruise starts.

Action: SSC to emphasize to all PIs that they should compare data from crossover stations before the data are submitted to the S&I Committee.

Action: Cruise leaders build crossover stations into cruise plans.

Action: Ed Mawji to start informing investigators of the appropriate people to compare data with as soon as the cruise participants and the TEIs they are scheduled to measure are identified in the pre-cruise metadata.

Greg showed the criteria that were used to review the data:

- Sufficiently detailed metadata on sampling and analytical methods, including calibration, replication, and criteria for rejection, to allow the S&I Committee to evaluate results (profiles).
- Analyses of reference materials when available.
- Within agreed-upon TEI precision limits determined by the community (elemental coordinators).
- Independent data – not adjusted or normalized to another data set.
- If no crossover, then replicate samples and analyses by independent labs.

Greg showed some examples of intercalibration data for several parameters. He showed PO_4 profiles that had poor agreement, even though labs used WOCE-approved methods. Henceforth, all cruises should use the Japanese nutrient standards. Nutrients and oxygen are very important for interpreting TEIs, so GEOTRACES has to get nutrients and hydrography correct.

Recommendation: Future cruises need to follow the GO-SHIP (updated WOCE) protocols (see http://www.go-ship.org/HydroMan.html).

Report on Data Crossover Analysis for IDP
Greg reviewed the results of the crossover stations:

1) *Atlantic Ocean*:
Crossover A – Dutch PE231 and US KNORR 204
Meets Criteria: Hydrography and nutrients /Cd, Cu, Ni, Pb, Zn /Mn;
Not Normalized / Al;
May need some recalibration / Fe;
Non-normalized U.S. data / Nd – isotopes and concentration / Th / Th-234 / Pa; needs analytical improvements

Gideon argued that the approved data at crossover stations should be publicized so that the community can see it and know the real precision of interlaboratory data sets.

Discussion of how to present the level of internal consistency in the IDP.
Reiner proposed to show the standard deviation for each crossover stations. He believes a table summarizing the information would be very useful. However, this should not be included in the IDP graphs illustrating the comparison of all accepted data for all crossovers stations.

Agreement: To include the intercomparison information in the IDP as a table with a standard deviation and provide a single graph example for educational purposes.

Action: S&I Committee to write a brief summary of the process to compare results at crossover stations to be included in the IDP. Summarize the average level of agreement below the top layer of the water column affected by seasonal variability for each TEI in a table (include percentage

variability rather than qualitative statements). Also include a single graph illustrating the process for educational purposes.

Crossover B – Dutch PE231 and Germany: MX81-1 – Only data for Nd from Germany and it matches very well.
Meets criteria: The Hydrography, but nutrients have problems / Nd.

Crossover C – Dutch PE321 and UK JC068
Meets criteria: Hydrography and nutrients / Cd, Cu, Ni, Pb, Zn, Mn, Al / Fe;
Analytical offsets need to be checked: Th and Pa / Th-234

Crossover D – French Bonus-Good Hope and German IPY5 ANTXXIV
Meets criteria: Hydrography and nutrients, not Si / Mn / Fe? New southern station looks excellent / Nd isotopes / Th and Pa / Th234

Crossover E – France Bonus-Good Hope and UK D357 and JC068)
Meets criteria: Hydrography (not nutrients and oxygen) / Pb, Mn / Nd-isotopes / REE / Th-234

Stations F and G
Only one data set at each. Major issue for contamination-prone TEIs is the sampling system. The U.S. and UK sampling systems agreed at other crossovers for non contamination-prone TEIs, so they are likely okay at F and G.

2) Indian Ocean
Japanese cruise (KH-09-5): They collected replicate samples at different depths and sent them to different labs. Their measurements inter-calibrated very well for Fe, Mn, Cu, Zn, Ni, Pb and Cd. So these data are recommended to be included in the IDP.

Arctic IPY data were generated following protocols, so they will be included in the IDP.

Review of the GEOTRACES Cookbook
Greg summarized the revisions underway:

- Simplifying hydrography and nutrients – now refers to GO-SHIP protocols
- All sections being revised in accordance with updated procedures found in *L&O Methods* special volume (http://aslo.org/lomethods/si/intercal2012.html); updated references throughout
- Besides the S&I Committee members who edited the volume, names of those who contributed directly to the Protocols will be acknowledged up front/first page
- Need to establish proper way to cite the Protocols (Have a "Cite As: xxxx" on web page by link)

The updated protocol will be posted at the end of the year.

S&I Committee Rotation
Lou Codispoti and Roger François are stepping down after the 5 years of service. Tina van de Flierdt and Karen Casciotti have agreed to become the newest S&I members. They were elemental coordinators so are familiar with the activities and procedures.

Decision: SSC approved Tina van de Flierdt and Karen Casciotti to become new S&I Committee members, replacing Lou Codispoti and Roger François.

Action: SSC chairs and SCOR to send thank-you letters to Roger François and Lou Codispoti for their services.

Greg would like to see another hydrography person added to the S&I Committee. Lothar Stramma and Jim Swift were proposed.

Decision: SSC approved S&I Committee recommendation to invite Lothar Stramma to become regular member of the S&I Committee.

Action: Greg to approach Lothar Stramma to see if he would like to join the S&I Committee.

Next proposed data review will be in May 2014 at NUI, Galway, hosted by Peter Croot.

Action: S&I Committee to provide dates for the forthcoming meeting to the IPO as soon as they are fixed.

Discussion: Is it necessary to have one document summarizing the criteria for defining a GEOTRACES section? There was general agreement that this would be helpful.

Action: IPO to prepare one-page document for cruise leaders, summarizing the recommendations for a cruise to be designed as section cruise.

Need for regular intercalibration cruises? – Bob Anderson
Bob explained that Mark Brzezinski is organizing an intercalibration for Si, but other groups are also in a similar situation. He believes that GEOTRACES needs to consider a long-term plan for intercalibration. There is a need to make an inventory of what is needed and then look for funding for long-term intercalibration. Ed Boyle noted that Ken Bruland is retiring, so he can't oversee the process forever. Hein explained that he would like to propose a cruise to his national bureau of standards to take Geo Smith and Ken Bruland's system to collect a new set of samples. They need to decide whom else to be on board to run immediate shipboard tests. The Netherlands GEOTRACES committee wanted to propose it, but Hein hasn't contacted Ken yet.

Could the Dutch ship get back to BATS to collect water samples there for the new standards? Maybe.
Ed Boyle asked whether GEOTRACES can involve the Canadian group that has been distributing seawater samples with TEI concentrations that are too high? Hein agreed that that sounds like a good plan. Could the Canadians take responsibility for long-term distribution of GEOTRACES samples?
Hein has good staff and would prefer to ask Canadians to help support the program financially, rather than assuming responsibility for the programme. Phoebe Lam noted that particle experts would like to do something similar to get large volumes of real marine particles. They could use Michiel's big centrifuge to separate large volumes of surface particles. Greg responded that the S&I Committee has talked about this, maybe taking the continuous C-Fuge to two regions, one coastal with more lithogenic particles and one open ocean. For large-volume analyses, about all one can do is return to BATS or SAFe (baseline stations).

Question:
Would the particles be collected for both contamination prone and non-contamination prone TEIs? Yes, everything should be treated as contamination prone.

Action: S&I Committee to provide Hein de Baar with a list of people interested in intercalibration, and of "heroes" willing to help.

Data Management

Summary of the Joint S&I and DMC Committees' Meeting – Andy Bowie
The meeting was held just prior to the SSC meeting and reviewed the S&I Committee results and recommendations. The participants also looked at the potential inventory of data for the IDP. It was decided to place strong emphasis on the primacy of ownership of data. Andy summarized the main discussion items:

- Metadata – metadata are quite poor. An action item was decided to ask data originators to cross-check metadata. Some examples of the desired level of information will be provided.
- Section maps – there was also a review of GEOTRACES sections and a discussion of which parameters will be included in the IDP.
- Inclusion of unpublished results; exclusion of published data – The IDP may include unpublished data; for this reason, the DMC proposed that in order to download the IDP, data users will be required to log in and provide contact details and other information.
  Exclusion of datasets – The DMC decided that data need to comply with the intercalibration criteria to be included in the IDP. Even if data have been published, they will need to pass the data quality review to be included in the IDP[1].
- Verification of data by data originators – Originators will be requested to double-check the data provided.

In the meeting there was also a discussion of some technical issues:

- Handling issues (parameterisation/flags (IODE) / units and conversion) – The raw data will be provided in the thumb drives as a link to the log in web page.
  It was decided for the IDP to use the recently agreed IODE data-quality flags, so it will be suggested to data originators to use these. Units and conversion: it is important that the originators provide data in the original form with no conversion. Any necessary unit conversion (e.g., to "per-mass" units) will be applied during construction of the IDP. TEI data values will have links to data originator, analytical methods and associated publications. This will allow the database to be searchable.
- DMO and GDAC capacity – They are operating at capacity, so there is a limit to how much additional data can be included in the IDP. Other data proposed could be accepted but only after the IDP release.
- Definition of the IDP: It will consist on an online database (under registration), gallery of section plots and spinning 3D TEI scenes that may be distributed on thumb drives and supporting documentation.
- Release of the IDP (meeting and conferences – Ocean Science 2014) / data journals, ESSD, DOI / thumb drives:
  There will be Town Hall at Ocean Science 2014 (lunch time) with talks and distribution of the thumb drives. USB drives will only contain the section gallery and 3D animations , but no digital data. There will be only links to the online IDP database so people wanting to download the data will be required to register. The thumb drives offers a tangible product and good publicity, teaching aids and promotion material for funding agencies. There will be at least two publications related to the IDP (probably in *Earth System Science Data*). The database will be published with a single DOI for the entire database.
- Citation: There will be a download agreement that explains that individuals using the data need to cite the originators. The emphasis will be in the authors.

[1] NOTE: Later discussions suggested separating data in Tier-1 and Tier-2. Tier-1 will include data that have passed the S&I review. Data will be flagged as "S&I Reviewed". Tier-2 will include data that could not be reviewed by the S&I Committee (e.g. because crossover stations were not occupied; because replicate samples were not collected; because the consensus values do not exist for SAFe samples so they cannot be used; because the parameter is unusual and not generally measured by multiple laboratories), but for which no problems are identified. These data will be flagged as "Not S&I Reviewed".

Andrew reviewed the timeline to IDP release:

- S&I Committee /DMC contact data originators in mid-October 2013
- Final data to GDAC by mid-November 2013
- Delivery of data from GDAC to Reiner by mid-December
- Production of IDP by the time of Ocean Sciences 2014 at the end of February
  Need for timely responses from data originators to data queries from S&I Committee, DMC and GDAC.

Discussion:
Publications - At least the following papers are needed:

1. Paper describing the product itself (what is inside, ocean coverage, parameters, formats, description to use the data, etc.), including description of the visuals. --- Leadership for DMC.
2. Second paper about the S&I process and including the procedures that led to approval of the data included in the IDP. This will include the criteria for approving data. --- Leadership for S&I Committee

The goal is to include all the GEOTRACES PIs that provided data as co-authors of these papers if they agree. These papers will be cited a lot so this will benefit the authors.

Citation Policy - A citation policy was drafted during the DMC meeting. It will appear every time a user downloads the data or opens the data in Ocean Data View (ODV). Before discussing the citation policy, Hein asked to discuss what data would be included in the IDP. The Atlantic section data are not yet published for many data sets, especially for Dutch scientists, who were delayed by their Mediterranean and Black sea cruises. Hein contended that the data policy should guarantee that young people who generate data will be included as co-authors of papers written by people using their data. Also, Hein would like that the registration process include a questionnaire asking about the purpose the data will be used for. Andy responded that this is the plan. David Turner was concerned that giving the entire IDP a DOI gives users a way around the citation policy. Without a DOI, the user must cite original papers. Reiner responded that the purpose of the citation policy is to encourage citation of original papers by users. But for modelers using the whole package, it would be possible to cite the package, as it may be not be possible to cite all the original papers. However, the citation policy mentions that if they are working for a particular area then they need to cite the authors of the papers.

Martin stated that he would like the license to be worded more strongly. Remove “do not please” and include agreement to cite original authors as a condition to download the data, so they are obliged to do so. Hein added that part of the quality-control review of data includes the review of manuscripts, so PIs may want to change their data following manuscript review. Reiner responded that data are always being updated, so this is an ongoing issue. So, postponing until publication is not a solution. Gideon clarified that a data product with a specific release date (such as “GEOTRACES IDP 2014”)is static by nature. Any changes would be made in the following version. A product can’t be citable unless it is static. Martin mentioned that the finalized versions of data should be the only ones to be included in the digital data, but why not include some non-final data in the visualizations. For example, the Nd data are well intercalibrated but not published. Gideon responded that the visuals should represent the IDP. So if data aren’t in the 2014 IDP, then the visuals should wait for the 2016 IDP version. Reiner added that the visuals are to give the users a short cut to education and promotion products, not for original research. Katharina noted that part of the justification for the IDP is to show funding agencies and other communities that GEOTRACES is making progress. Reiner responded that individual PIs can still do that, but for the IDP it would be misleading to include graphics that are not in the database.

Micha asked whether including unpublished data in the IDP would preclude its publication elsewhere. Other meeting participants had the same concern that journals may not allow publication of data that is already in a data product with a DOI. Many people noted that many journals allow publication of data that already has a DOI. Catherine commented on including unpublished data in the IDP that no one from outside the community can come up to speed fast enough to write a paper using those data. Katharina responded that the problem is that some data generators want to model their own data, but haven't had time to learn modeling, whereas modelers with existing skills can publish faster. There was agreement among meeting participants that modelers wouldn't do that. Also, modelers can be urged to include the data generators as co-authors. Martin noted that the decision about including their unpublished data in the IDP will be generator-dependent, for some the journal policy about DOIs is most important. For others, they may want to hold onto the data until they can model it themselves. Chris Measures added that even publishing plots of data can be risky. He had the experience that someone photographed plots on one of his posters and extracted data from the photo. Hein noted that when the system of co-authorship works, it's great because modelers engage data generators as co-authors and data generators get more publications. Reiner added that it works even better if we decide as a community to enforce good behavior by peer pressure. The policy citation needs to be further discussed. We will come back to it later in the Agenda.

Process of securing permission to include data in the IDP will involve a couple of steps:

1. S&I Committee contacts data generators to inform them that their data quality is good.
2. DMC contacts data generators with a request for data use in the IDP, clarifying policy.

GEOTRACES Data Assembly Centre Activity Report – Ed Mawji

GEOTRACES is a huge data management undertaking; so far there have been 49 cruises, generating 956 data sets from 221 scientists and students involved from 14 different countries. This year, two GEOTRACES sections have been completed (GA04 and GI03), covered by 5 cruises of three nations (The Netherlands, Spain and India). One cruise planned for later this year will be the U.S. cruise in the Pacific Ocean between Peru and Tahiti. Another forthcoming cruise is the Japanese cruise that was presented yesterday.

Ed Mawji showed a map of cruises completed this year and the future cruises. So far, 19 section cruises have been completed. He then showed a map of process studies (6 completed) and compliant data (2). The criteria for process and compliant data cruises will be reviewed tomorrow. The CoFeMUG project was discussed during the joint DMC/S&I Committee meeting. The S&I Committee will review the CoFeMUG data. Mawji then presented a map with the crossover stations.

Data handling issues: Lack of adequate metadata is a continuing problem, as is the inclusion of data flags and consistent units from data contributors. Data are being submitted with just station numbers and sampling depth, but missing event/CTD cast and bottle number. The mantra should be that adequate metadata must be provided to make the data accessible and usable at any time in the future without the need to contact the data originator.

Action: Ed Mawji to provide examples of how data needs to be provided.

Action: Maeve to provide good examples of how the metadata needs to be submitted.

Reiner emphasized that the more complete the data are when submitted, the less work that will be required for Ed Mawji. Chasing missing data is taking a lot of Ed's time, so including the necessary metadata when the data are submitted will make his work more efficient.

Action: SSC members to provide data as complete as possible to GDAC and remind colleagues to do so as well.

Publishing GEOTRACES data – Ed Urban
Data publishing is making data available for easy discovery and re-use by others. It can take several different forms including publishing in: data journals, using data publishing services, and linking data to traditional journal articles.

Publishing in data journals - The main purpose of publications in data journals is to focus on describing the data sets and data compilations and point to where data are archived, with the relevant DOI. The longest-standing data journal that publishes papers related to ocean science is *Earth System Science Data* (ESSD), which is an open-access electronic journal published by Copernicus Press. Urban showed an example of a paper from ESSD. The abstract describes the data and includes the DOI of the data. When clicking on the DOI, it is linked to the PANGAEA database, and to the data related to the article, as well as giving a list of the articles from which the data were compiled.

Publishing through data publication services - These services get a scientist's data on the Web in a discoverable and citable form. An example is the Nature Data Publication Service that will be launched in Spring 2014 and open to submissions in Autumn 2013. Many national oceanographic data centres provide this service for scientists of their nation. In Germany, PANGAEA system pioneered the assignment of DOI to ocean data. Information about submitting data is available on the PANGAEA site. In the UK, the Published Data Library (PDL) is a service of the British Oceanographic Data Centre that provides snapshots of specially chosen datasets. It exposes a fixed copy of a data set that is assigned a DOI and then manages that copy of a data set in such a way that it may be located and referred to over an indefinite period of time. In the United States, the U.S. National Oceanographic Data Center (NODC) and the Biological and Chemical Oceanography Data Management Office (BCO-DMO) will publish data and issue DOIs.

Linking data to traditional journal articles - A major goal of data publishing approaches is to link data with traditional journal articles. Most journals encourage such linking, although some still accept data and other supplementary material in non-machine readable form and a user must be a subscriber to the journal to have access to the supplementary material. The ideal approach is to have a DOI assigned to the data used in a paper before the paper is published and to include the DOI in the published paper, allowing direct access by readers to the data. SCOR is working with BCO-DMO, BODC, NOAA, and others to encourage this approach.

Questions:
Gideon asked how big does the data set needs to be before it can go into these data publishers? Urban answered that ESSD usually publishes data as a compilation at least at basin scale if not global, and not an individual data set. Examples include CARINA and GLODAP. But, in PANGAEA or BCO-DMO, even small data sets have a DOI assigned. Urban recommended that young investigators include their personal data sets in a repository that offers a DOI to give them personal recognition for their data. Data sets with their own DOI can still be included in larger compilations that also have a DOI. Once data have a DOI, the data can't be changed. If data need to be updated, or expanded, then it is necessary to get a new DOI. Data publishers will often include the new DOIs on the sites where old DOIs are included and show the versions in one place together.

Intermediate Data Product

Discuss details of the IDP launch at Ocean Sciences – Andy Bowie
There will be a Town Hall meeting at OS2014 for about 200 persons at lunchtime. Lunches will be provided. USB drives will be available. There will be 3-4 talks over 30 minutes. Bob and Gideon have been tasked to oversee the Town Hall, so that the programme can benefit from experience with the previous GEOTRACES Town Hall.

Hein asked for more details of the Town Hall meeting. Gideon explained that there would be a very short introduction of GEOTRACES, followed by a presentation of the IDP and finally, a number of short presentations (4-5) about the scientific aspects of the results included in the IDP, also reflecting the diversity of the programme. The session will be concluded with a question and answers period. There was discussion about how to advertise the Town Hall. Alessandro offered to advertise through an email list of modelers. Catherine suggested that the IPO make a newsletter issue especially focused in the IDP and Town Hall meeting. Katharina Pahnke will provide an email list for the paleo-community.

Action: SSC members to send IPO names of organizations or e-mail lists to publicize the Town Hall and IDP release.

There will be also a booth that has been booked by SCOR. There is a need for volunteers to staff the booth and a sign-up sheet was made available at the SSC meeting. The SSC also tasked Elena to staff the booth.

Action: Elena to staff the booth at Ocean Science 2014.

Catherine commented that it would be good to rent a monitor to display plots and animations.

Action: Ed Urban to coordinate the booth and see what material could be displayed (ideally, a large touch screen) and find out about the cost.

Afternoon: Continue discussions about IDP.

Discussion about the Citation Policy for the IDP.
The main issue is how to state the SSC expectations for users to cite original publications. Some SSC members would like the current draft to be expressed stronger. Gideon will incorporate SSC suggestions in the draft of the download agreement and circulate it to SSC members. The draft will be discussed again tomorrow.

The SSC discussed what to title the document: Licence? Citation policy? Agreement? Consensus was reached on "Download agreement".

Reiner reminded participants that, for data used with ODV, he can ensure that users agree to the policy every time that they use the data. However, there was consensus that the "download agreement" will appear only the first time that users open ODV.

Discussion about the sequence of contacts to data generators:

1. The S&I Committee will contact all data generators and inform them of the intercalibration results: they will inform them that data have met the criteria for GEOTRACES or to encourage them to continue working to improve the data.
2. Then, the DMC will contact those whose data have met the criteria and ask them if they want the data to be included in the IDP, and to check the data.

Chris had written a draft to ask data originators permission to put the data in the IDP. The download agreement and also the IDP description will be included as an attachment. The draft was discussed.
Reiner suggested putting a deadline for data providers to respond, with an explanation of what it means if they do not respond. Bob suggested accomplishing this using two sequential e-mails. The first would be a short e-mail asking whether they want to be included. If they agree, a second email would ask them to check their data. There was considerable confusion about which message will request what information from data originators. Gideon stated that data originators cannot be

requested to submit their data twice (to S&I Committee and to GDAC). The S&I Committee should just ask data providers to please send their data again to the GDAC or national data centres. The draft email was projected, SSC members provided suggestions, and the draft was approved. The S&I Committee will draft an email for the review step. (This is an action item from DMC meeting already).

Other issues:
Gideon asked, for the next GEOTRACES IDP, if it would be possible for the S&I Committee to review the whole section data set rather than just examining crossover stations? Reiner responded that WOCE tried an approach like this, but exhausted their data reviewers by trying to review all the data. Maeve noted that the S&I Committee has established a good rapport with data generators by assuring them that their data is protected and that it is not the complete data set. If we ask data generators to submit all their data for checking, they might be more worried about other people using their data without permission. Gideon suggested that the S&I Committee review what is already published and public in the 2014 IDP, to determine whether review of the complete data set is feasible.

Action: S&I Committee to consider the feasibility to check complete section data sets (from IDP) and bring their decision back at the next SSC meeting.

GEOTRACES Sections

Overview of the existing sections – Reiner Schlitzer
Reiner reviewed existing sections basin by basin.

Indian Ocean
GI05 – France/Australia (not before 2017) – Germany (Eric Achterberg) is also interested in joining France/Australia.

Southern Ocean
The United States (GP17) and Japan (GP19) have plans for the Pacific sector. Australia wants to repeat GIPY6 south of Tasmania, and possibly a section south of Freemantle, but they would be multidisciplinary cruises, so they would be process studies, not sections.

Pacific Ocean
GP04 – No longer to Canadian
Japan – Plans to do GP18, GP10 and GP19 (GP18 1/3 was not completed in the previous cruise so it will be done this year)

Discussion:
Gideon asked whether a letter from the SSC co-chairs will help Japan to cover sections at a resolution of 5 degrees. Jing answered that they have a lot of stations that require four days each to collect large volumes of water. Gideon recommended reducing the number of super stations to include more regular full-depth stations to allow for higher spatial resolution. Jing asked whether other nations could help make measurements, as Japan cannot cover all TEIs.

Action: Jing to prepare a list of parameters for which help is needed for the Executive Committee, which will help finding analysts.

Catherine presented a map of cruises with sections as station dots and not lines. The map showed an Atlantic Ocean with a very high resolution and other basins where the resolution is weaker. Reiner noted that the results from the Atlantic Ocean show that sampling at a resolution like the Atlantic is needed to resolve important features in TEI biogeochemistry.

Recommendation: When planning sections the resolution is very important. Results from the Atlantic sections show that a resolution of at least 5 degrees is needed to resolve important features in TEI biogeochemistry.

Review plans for future cruises in the Southern Ocean – Catherine Jeandel
Is another Indian Ocean planning workshop necessary? There is a need to review the Indian Ocean Plan to provide denser sampling. If this is not accomplished through a workshop, there is at least a need for a working group to review the implementation plan so that it considers all that is known about circulation in the Indian Ocean.

Action: Catherine to organize a working group to review the Indian Ocean Plan. This group will include Alakendra Roychoudhury, Eric Achterberg, Martin Frank, Gideon Henderson, Katharina Pahnke, Maeve Lohan, Geraldine Sarthou, Alessandro Tagliabue, Sunil Singh and Andy Bowie. The working group will consult with the GEOTRACES Executive Committee and GDAC.

Atlantic Ocean
Martin Frank reported that last Monday was the deadline to submit proposals for German cruises. As Eric Achterberg is in Germany now they considered the possibility to submit a proposal to do the GA08 section in 2015/2016 (northern winter) or 2016/17. They cannot do four zonal sections, only two. The start and end would be in Cape Town, South Africa. The cruise will need authorisation from five countries through whose exclusive economic zones the cruise would pass. All TEIs will be covered. A major target is the Benguela upwelling.

Discussion:
Reiner asked whether it would be possible to include funding for the GDAC in their proposal? Martin responded that the proposal submitted was only for the ship time. If it gets funded, they will submit a proposal for the science part and then they will try to include funding for GDAC. Greg asked whether there will there be crossover stations. Martin responded that there will be one with the CoFeMUG cruise. Gideon suggested to occupy a crossover station with GA10 right out of Cape Town. Olivier Marchal asked if there will be any attempt to collect sediments? Martin responded that there are no such plans as of now, but they can try to do some sediment sampling at the CTD stations. Catherine asked about the station resolution. Martin responded that it will be 5 degrees, but might try to make the stations a bit closer. Reiner asked if there will be any empty berths? Martin responded that the ship is full and there will be no berths available. Reiner asked about ancillary parameters. Martin responded that they have found somebody to make the nutrients and oxygen and will make sure they follow the GO-SHIP protocols.

Opportunities for sampling ^{17}O excess in the deep ocean – Bob Anderson
Bob received a request from Boaz Luz looking for opportunities to sample triple oxygen isotopes, in the immediate future it is the polar region. He is ideally requesting a berth, but even samples would be helpful.

Action: Bob to provide to Boaz Luz information about PIs for forthcoming cruises.

Discussion: How to establish contacts between new TEIs and cruise leaders.
The information about forthcoming cruises is probably not available on the site at the time that proposals are submitted. Elena asked whether the IPO could publish information about cruises proposed? Meeting participants were reluctant to do this.

Decision: Berths/Sampling requests – People interested in getting samples or berths from GEOTRACES cruises should contact the IPO. The IPO will then distribute the requests to cruise

leaders or forward the request to the Executive Committee to help identify the appropriate person/cruise.

Action: IPO to include in the recommendations for the cruise leaders that they contact the IPO to ask if there are any investigators studying new tracers who are looking for cruises.

GEOTRACES Budget – Ed Urban

The principal funding need at the present time is for GDAC as UK funding will be over and the funding from NSF will be used more quickly. The annual cost for GDAC is US$127k. There is $20k budgeted for the IDP release in 2014 and $20k for a model-data workshop in 2015. The balance is slowly decreasing, so there is a need to get funding. However, current funding will last until the end of 2015. Reiner noted that the AWI funding could probably been extended along for 2014-2015.

Ed Urban and Elena are working to put together a sheet on all national income that has been provided to GEOTRACES during the life of the project. This will be useful to demonstrate to sponsors the diversity of contributions.

Action: Ed Urban to distribute the national contributions Excel file and all SSC members to check/correct/add to the national contributions shown.

Capacity Building – Ed Urban

There are three SCOR capacity building activities relevant to GEOTRACES:

1. SCOR Travel Grants - These grants provide travel support to students and scientists from developing countries and countries with economies in transition to attend scientific meetings. Support was provided through these grants for each of the basin planning meetings and could be used again if GEOTRACES plans workshops and large meetings.
2. SCOR Visiting Scholars Programme – This programme started in 2009 and funds scientists to teach and mentor in developing countries (for 2 weeks or more). Hosts are expected to provide lodging and some local support. The next call for scholars will be issued in December. Normally, three Scholars are funded each year, but there are 6 Scholars in 2013 because three carried over from previous years.
3. SCOR funding for cruise participation – GEOTRACES is the only programme that has requested this support. So far SCOR has provided funding for 3 participants on GEOTRACES cruises:

    - South African scientist participated on an Australian cruise
    - Brazilian scientist participated on a Dutch cruise
    - Tunisian scientist participated on a Dutch cruise

SCOR pays for airfare to the departure port and from the arrival port. The hosting cruise pays for expenses on the ship. If there is any person interested, either to locate a person or to locate a berth, they can contact Ed Urban (SCOR).

Ed Urban finally presented the publication “Using Scientific Meetings to Enhance the Development of Early Career Scientists” in *Oceanography* magazine. This article could be of great help when GEOTRACES organises big meetings.

Training opportunities – Bob Anderson

Bob asked if there are any SCOR plans to help support individuals from developing countries to be trained in an established laboratory? Urban replied that this is possible. Maeve added that the COST project showed this is a very successful approach. It this could be done internationally, it would be great. Bob added he has received a request from a scientist from Kuwait looking for training in Fe biogeochemistry (especially coastal) and/or on the Flow Injection Analysis of Fe in seawater. He will cover his own expenses. Bob suggested that it would be useful to have a page on the GEOTRACES site to help in these training opportunities.

Discussion:

Greg stated that the IPO should not actively advertise training opportunities like this and Catherine agreed. Ed Urban suggested that when holding an SSC meeting in a developing country, GEOTRACES should consider how to take advantage of training opportunities.

Decision: Training requests - Requests for training need to be sent to the IPO. They need to include a CV. The IPO will then distribute the requests to potential labs.

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Process Studies and Compliant Data

Reiner explained that there would be a change in the order of the items to be discussed. The SSC will first review the definition of process studies and compliant data, and later review the requests for GEOTRACES process study approval.

Improve Definition of Process Studies and Compliant Data – Catherine Jeandel

The criteria for process study were reviewed during the last SSC meeting in Goa. The IPO drafted new criteria based on that discussion. Also, the boundary between process study and compliant data is often unclear. The criteria were projected and Catherine explained all the changes made. The SSC reviewed the criteria and provide suggestions for changes. The new approved criteria are posted on the GEOTRACES site:
http://www.geotraces.org/images/stories/documents/Criteria_Process_Studies/ProcessStudyCriteriaREV_OCT2013_SSC.pdf

Jordi asked how investigators could gain approval out of cycle (between SSC meetings) when there is a very short notice on a call for proposals.

Decision: Process to approve GEOTRACES Process Studies – Request for a process study that arrives out of cycle (i.e., which needs to be reviewed prior to the next SSC meeting) to be submitted to the IPO, which will then send it to the SSC co-chairs. SSC co-chairs to direct the requests to a few experts in the field of the proposed process study for review. The IPO will later send the request to all SSC members who could provide feedback. GDAC and the chair of the S&I Committee should be copied on all requests for a process study. The goal is to provide a final response to a request for a process study within two weeks.

Discuss requests for Process Studies

1) 2013 Taiwanese test cruise (Tung-Yuan Ho): The test of the new ship was conducted without assurance that the sampling systems would work, so a request was not made in advance to designate the cruise a process study. The study measured atmospheric sources and the internal cycling of TEIs. The cruise track covered a gradient in aerosol deposition. The Taiwanese scientists want to re-run the cruise track in different seasons to examine the seasonal cycling of aerosol deposition and its impact on seawater chemistry (next in March 2014). They have a time series of aerosol collection in a marine national park, to compare with ocean data. In many cases, winter fluxes are greater than summer fluxes. The cruise plan includes 8 stations. The most seaward is a crossover with Japan. Tung-Yuan presented a list of TEIs measured. He noted that sampling is compromised because they still must use a metal hydrowire. Eventually they will have a Kevlar wire. The station-to-station reproducibility of TEI data is quite good. So, it is not clear that the wire is a problem, except perhaps for Zn. Endorsement will help secure future ship time and obtain additional funding to organize a more complete group of GEOTRACES scientists. This cruise is especially important now that many junior scientists are coming to Taiwan. The cruise covers about 50% of the line listed as GP07.

Discussion – Should this be a section or a process study?

Gideon noted that a GEOTRACES section must include: a) Full water column sampling, b) all the key TEIs, and c) clean sampling and intercalibration protocols. Jing suggested that if the cruise could be delayed until 2015, Japan could help provide a Kevlar cable and can help cover some missing TEIs. Bob suggested that the March 2014 cruise be considered a process study because it combines with the test cruise to make a time-series process study of aerosol deposition. Then, once a Kevlar cable can be obtained and all key TEIs can be covered, then the ongoing process study can be repeated as the

official section GP07. Hein and Gideon urged Tung-Yuan to report the Taiwanese results of the SAFe samples to Ken Bruland.

Action: SSC co-chairs to write a letter of support for Tung-Yuan's request to purchase a Kevlar cable.

Decision: SSC approved Taiwanese cruises in 2013 and 2014 as (multiple) process study.

2) Canadian Line-P Iron Programme (Maite Maldonado): This is not a single cruise, but part of the long-term Line P Programme. It includes three cruises per year (26 stations total, 5 long stations). It is one of the longest time series in the world ocean (57 years, back to 1956). It is led by government scientists. Marie Robert is the programme coordinator. Andrew Ross and Kyle Simpson handle Fe sampling and analysis; Lisa Miller handles ^{234}Th and Angelica Peña handles phytoplankton and HPLC.
The Fe measurements on Line P cruises started in 1997, occurring on a total of 28 expeditions.

Description of the Trace Sample-Clean Sampling System: currently the conducting vectran cable is 2300m in length, but they eventually hope to go to 5000m. The goals of the process study are (proposal submitted in April 2012): tracking sources of Fe to the open ocean, studying biological responses to iron inputs and process studies involving Fe-microbe interactions.

Maldonado reviewed how the Line P Iron Programme would meet the Process Study criteria. It complies with all criteria. Other advantages for the cruise to be endorsed are:'

- A time-series dataset for TFe and dFE in the NE Pacific Ocean (including station PAPA, as suggested as crossover station)
- The opportunity to collect samples for GEOTRACES intercalibration exercises or ancillary samples (specially in February cruises)
- Foster collaborations (e.g., Japan and Canada)

Discussion:
Andy noted that the DMC reviewed the proposal and recommended it for approval. Gideon asked whether historical data is also to be included? Maldonado responded that only future cruises would be included. Historical data could be linked but not labeled as GEOTRACES data. Reiner asked if this meant that the SSC was being asked to approve all future cruises? Can the measurements be sustained on a regular basis? Maldonado answered "Yes" because the measurements are part of a long-term research programme. Phoebe asked whether this could be considered a section? They collect most of the key parameters; only a few are missing. Catherine responded that it cannot be a section if it does not include the full suite of parameters. Bob asked whether the data can go to the GDAC? Maldonado answered that they could.

Decision: SSC approved Canadian Line-P Programme as a Process Study and encourages Canadian scientists to add the full suite of key parameters to make it a full section at least once. – Note: This decision involves future cruises. Historical data could be linked but not labeled as process study.

Note: The Line-P Programme may provide a future opportunity to collect clean seawater for intercalibration, including replacement of SAFe and GEOTRACES samples.

GEOTRACES Workshops

Latin American Workshop – Angela Wagener
The first call for expressions of interest generated a large amount of responses. However, at the end only a few persons were present. The feeling was that people thought they were not ready to work with GEOTRACES. At the end of the meeting several National Representatives were agreed, that are

already posted on the GEOTRACES site. Also a final statement was produced which is available on the GEOTRACES site:
http://www.geotraces.org/images/stories/documents/workshops/LA/GEOTRACES_LA_Statement.pdf

Key points that restrict the development of GEOTRACES in the region are the lack of appropriate capability on board for TEI sampling and the need for on-board training. Suggestions for continuing development of GEOTRACES in the region include the following:

1. Run short courses at universities in the region.
2. Invite interested scientists to join cruises.
3. Invite a GEOTRACES scientist to participate to the ENQA 2015 meeting to make a presentation on analytical issues.
4. There is the COLACMAR 2013 meeting, but Angela will not be able to attend. Danilo Calliari from Uruguay will be requested to attend.
5. There is a need to activate the national contact points. How? Can the IPO activate them?

Bob noted that all national contact points in Latin America qualify for SCOR funding for capacity building.

Action: Elena to write draft text about SCOR funding possibilities for capacity building and send to Ed Urban. Once approved, IPO to send the message to LA national representatives.

Action: Elena to update the GEOTRACES poster for COLACMAR 2013.

Angela will attend a meeting about the new Brazilian research vessel. She is planning to work to try to make the ship meet the GEOTRACES requirements.

Action: SSC co-chairs to prepare a letter of support to Angela for the new research vessel.

Russian Workshop – Ludmila Demina
About 80 Russian scientists from 8 institutes participated. 29 oral presentations were made (11 from GEOTRACES senior scientists and 18 from Russian scientists). The first Russian GEOTRACES statement was created and posted on the site:
http://www.geotraces.org/images/stories/documents/workshops/Russian/Russian_GEOTRACES_Statement.pdf. A Russian GEOTRACES Committee was created following the suggestion from the statement.
In addition, after the Workshop a Round table "Outlook of the Arctic Ocean research: International expedition – 2015" was held within the frame of the second international exhibition «Ocean-EXPO".
Two papers devoted to the GEOTRACES workshop were published – one was published in the journal "Russian polar researches" (AARI, St.-Petersburg) and the second one in journal "Oceanology" (Shirshov institute, Moscow). An organizing meeting of the Russian GEOTRACES Committee was held in April. Prof., acad. A. Lisitzin (Shirshov institute of oceanology RAS, Moscow) and prof., acad. V. Sergienko (Institute of chemistry RAS, Vladivostok are the co-chairs.

Information for a proposal for the GEOTRACES National programme formation was collected until the end of September. Particular Russian interests are focused on the biogeochemical processes that lead to formation of the bottom sediments in seas and oceans. The basic processes under consideration include geochemistry of the Arctic major rivers; fluxes of aerosols and settling particles in the seas, including chemical fluxes, both vertical and lateral, as well as bioaccumulation and speciation of trace metals and radionuclides in bottom sediments; and paleo-environmental proxies. There is a proposal for process studies, which needs more participants. The theme is improvement of our understanding of the large-scale circulation and changes of the central Arctic Basin. People willing to participate should contact pisarev@ocean.ru.

The Arctic-Antarctic research institute (AARI, St. Petersburg) has a new ice-breaker "Akademik Treshnikov". Its first cruise to the Antarctic was held this year. One week ago, an international expedition in the Arctic was completed. Samples for intercalibration of trace metal in SPM were just obtained. The 20th international school on marine geology will be held and Ludmila will teach about TEIs there and introduce GEOTRACES. In terms of the Russian Arctic expedition that would be part of GEOTRACES, so far it has not been approved and funded by the government (mostly due to reconstruction of Russian Academy of Sciences). But, recently Vladimir Putin has claimed that there would be a larger budget for their expedition activity in the near future. However, they do not have more details, so funding is still uncertain.

International Intercalibration Particulate Workshop – Phoebe Lam

Phoebe first thanked SCOR for providing funding, and Chris Measures and his collaborators for providing logistical help. Then she reviewed the list of participants and the agenda of the meeting. The meeting participants proposed three intercalibration activities:

1. Total digests for trace elements (key TEs plus a few).
2. Major particle composition (POC, PIC, bSi, lithogenic).
3. Weak leach for trace elements (key TEs plus a few).

Activities 1 and 2 are going to be done in the immediate future. They decided not to do activity 3 for now, as there was no time to develop the protocols. Samples from activities 1 and 2 will be from Jim Bishop's 293 mm MULVFS sample archive from 2009 US GT IC2. They decided not to use samples from the Mediterranean cruise (as initially announced in the call for interest) because Phoebe believes that would not be enough samples to run the intercalibration due to the large number of responses received. She presented the results of responses for intercalibration: 44 responses from 17 countries. However, for total digest. Only 17 have confirmed and only 6 confirmed for major particle composition.

Data Model Synergy Workshop – Possible partnership with U.S. Ocean Carbon and Biogeochemistry, OCB – Bob Anderson

In order to create continuity for the Data-Model Synergy Workshops, an idea was to collaborate with the U.S. Ocean Carbon and Biogeochemisty (OCB). Their call for proposals has been published. OCB supports large workshops, but the scope is to gather the broad expertise of the OCB community to address novel ideas and research questions. The 2014 research priorities for OCB include nothing about TEIs, but do include ocean chemistry and ocean carbon. However, OCB may be interested to develop something in the scope of GEOTRACES. For a joint workshop the idea would be to do a focused workshop, for example, to define strategies and goals for a large-scale GEOMICS-like study of biological-chemical coupling in the ocean. The idea would be to bring people together to understand each other's discipline and define essential components to work together, brainstorming rather than planning a specific project. Note: Most of the OCB funding will have to be for the US participants (2/3).

Atlantic Synthesis Workshop – Gideon Henderson

Gideon proposed organizing a workshop to synthesize Atlantic Ocean sections across the range of TEIs after the IDP release. There is so much data available for the Atlantic that it is time to go beyond writing papers on single sections and aim to interpret results from the entire basin. Gideon has funding to organize a final cruise data workshop and it could be expanded to an Atlantic-wide synthesis workshop. Reiner responded that it would be very useful to have modelers at such a workshop. This may work as a Data-Model Synergy workshop, even we do not name it as such. Martin commented that we need to start thinking about large-scale integrative questions like hydrothermal fluxes, margin

fluxes, etc. Alessandro added that such a workshop would be a great opportunity for modelers to learn about IDP data. Reiner added that an Atlantic Ocean focus would be a natural continuation for the Data-Model Synergy Workshops. Gideon volunteered to organize the workshop in the UK (probably London).

Bob commented that another option that may be very interesting is to focus on topics and bring the data for all relevant sections and analyse them. The SSC needs to decide how make the most of all the data sets.

Reiner proposed to have first the presentations of all proposals for workshops and then re-opening the debate.

Southern Ocean Planning - Bob Anderson

GEOTRACES still lacks a plan for the Southern Ocean, although historically and recently there has been a lot of work on the Southern Ocean, partly because of GEOTRACES (for example, the Dynalife projects on Fe). Most of the studies have been focused on a particular TEI. Bob believes there is no multiple-TEI approach in the Southern Ocean. He has been thinking about the need for a planning workshop that documents the state of the art and develops a coordination plan for the Southern Ocean.
The SSC generally expressed their agreement with the idea. Bob is concerned about having a manageable number of workshops. He proposed to create a small committee to put together a plan.
The idea is one day summarizing the recent studies and one day of working groups, to finalise with a coordination plan for the Southern Ocean.

Discussion:
Gideon noted that there have been several national plans and cruises in the Southern Ocean already, including the IPY cruises. He wondered about how much coordination is needed for future work. Gideon believes a synthesis workshop would be most important. Chris responded that Bob's suggestion is very important, but he is not sure about the timing. A synthesis workshop should be done first. Martin agreed.

Thematic Synthesis Workshop – Catherine Jeandel

Looking at several sections, Catherine and Bob would like to propose having thematic workshops that focus on processes such as hydrothermal plumes, boundary exchange, etc. Catherine showed several examples to illustrate the idea. For example, she showed a section that shows the loss of ^{232}Th due to scavenging onto Fe-Mn oxides in the far-field hydrothermal plume. The extent of the plume is much greater than anticipated. Would a workshop dedicated to the impact of hydrothermal activity to the TEI cycles be relevant and timely? Bob added that an important question is "How important are the processes (such as dust, hydrothermal plumes, boundary exchange, etc.) for global biogeochemical cycles?" To answer these questions will require a lot of synthesis of data sets and many investigators working together. There is a needed to organize one or several workshops on these processes.

Discussion of all the proposals for Workshops:
Chris stated that all the proposed workshops are very important. But, he favoured doing the ocean basins syntheses first, as they are more manageable. Alessandro noted that a thematic workshop could also bring in historical data. Reiner added that thematic workshops could offer a way to focus on specific questions and see them in different ways. He believes this needs to be done from time to time. But, the integrated approach was one argument for GEOTRACES, so he favours the Atlantic Synthesis Workshop first. Hein noted that there will be a huge number of presentations at Ocean Sciences 2014 on TEIs in the Atlantic Ocean. We should look at those presentations and then assess what to do next in the Atlantic. We can then design process studies with higher resolution sampling that build on findings from the sections that have already been completed. Reiner added that an Atlantic workshop would allow participants to see data that they have not seen before and stimulate

new ideas. It is not finishing things but the beginning of things especially for the modelers. Hopefully, modelers will partner with the data originators. Gideon summarized that it seems that there is a consensus for a combined workshop of 4 days that includes sessions that focus on particular processes. That raises three questions: When? How many people? Funding?

Funding?
Gideon noted that, so far, he has little money, but can try to find more. Bob asked whether SCOR funds could be used if the workshops focus on the IDP. Ed Urban answered "Yes". Bob also proposed that nations that conducted Atlantic Ocean sections contribute some funding.

When?
It was suggested that at least 6 months should elapse after the IDP release, so the best time for the workshop would be the end of 2014 or beginning of 2015.

Note: The Workshop should be as comprehensive as possible but the IDP should be the core. This does not mean that the workshop would only look at the IDP data.

How many?
Someone suggested 200 persons, but not all need to be funded. Bob asked if 200 persons would be manageable? Discussions might be difficult. He proposed to use a working group approach.

Consensus: Combined Atlantic Synthesis workshop with specific sessions focused on processes. The core of it will be the IDP data, but other data might also be used.

Action: Gideon to set up a committee to prepare a combined Atlantic Synthesis workshop with focused thematic sessions. The core of it is the IDP data but other data can also be included. The Committee to include as well Alessandro Tagliabue, Maeve Lohan, Geraldine Sarthou, Ed Boyle, Bob Anderson, Olivier Marchal, Chris Measures and Micha Rijkenberg (and the IPO).

Discussion of Citation Policy - continuation
Gideon and Bob argued against specific recommendation to suggest co-authorship when unpublished data are used, but the majority of SSC believed that it is such a sensitive issue that for the first IDP it will offer reassurances to data generators if the words are included.

Action: Gideon to incorporate SSC suggestions in the draft of the download agreement and circulate it to SSC members for final approval[2].

Afternoon:

GEOTRACES Special Sessions

Ocean Science 2014
The list of GEOTRACES-related sessions available on the GEOTRACES site were presented. There will be a large GEOTRACES presence at Ocean Sciences 2014.

Action: IPO to send the slide presenting the GEOTRACES Programme to convenors of GEOTRACES-related sessions at Ocean Science 2014.

[2] The final text of the "Download Agreement" is included in Annex 1.

Goldschmidt 2014 session
Maite reported that 7 GEOTRACES-related themes were proposed, but that they were forced to combine them into four themes. Sessions are now closed. Seth John, as theme leader, heavily canvassed the GEOTRACES community to submit proposals for special sessions.

Other sessions?
Bob mentioned the Dust2014 conference that will be held in Castellaneta Marina in Italy. There will be a session in the impact of the biochemistry and climate.

SSC and DMC Rotation

SSC rotation – Reiner Schlitzer
Four SSC members complete their first three years of service at the end of 2013: Maeve Lohan, Jordi Garcia-Orellana, Maite Maldonado and David Turner. All four have agreed to continue for another 3-year term. Ed Boyle also accepted to serve as co-chair for another 3 years.

Decision: SSC recommends that SCOR reappoint Maeve Lohan, Jordi Garcia-Orellana, Maite Maldonado and David Turner, as SSC members for another three years.

Decision: SSC recommends that SCOR reappoint Ed Boyle as co-chair for another three years.

Discussion:
Should other Latin American scientists/countries be engaged in the GEOTRACES SSC? Maite mentioned that a potential candidate could be Ana Lombardi (Brazilian). She worked at Maite's lab for a year on speciation of metals, using voltammetry. Catherine suggested Vannessa Hatje and Leticia Cotrim da Cunha (both Brazilian) who participated in the workshop and were very involved in discussions and young. Another possibility could be Danilo Calliari (Uruguay). Bob pointed out the benefits of having a more senior representative in term of influence within the country for funding. Jordi suggested José Marcus Godoy (Brazilian), who was on board the Spanish cruise.

Action: Ed Boyle to contact Ken Bruland to ask about the opinion of Vannessa Hatje.

Action: SSC co-chairs to collect proposals on other Latin American candidates and decide about LA membership.

DMC rotation – Andy Bowie
Chris Measures rotates off as co-chair at the end of the year. However, because of the release of the IDP Chris has been asked to continue as co-chair until the release of the IDP and then rotate off. DMC co-chairs historically have been one data user and one data originator. Thus, there is a need of data user. DMC proposed Alessandro Tagliabue to be designed as co-chairs.

Decision: SSC approved Alessandro Tagliabue as replacement for Chris Measures as DMC co-chair after the IDP release in Spring 2014

Action: SSC co-chairs to send a thank-you letter to Chris Measures.

Can Bill Jenkins continue as a member of the DMC?

Action: Chris to contact Bill Jenkins to clarify if he would like to continue as a DMC member.

Also, there is a need for another member to enter the DMC Committee to replace Chris Measures.

The DMC recommended Laurent Bopp (LSCE, France).

Decision: SSC approved DMC recommendation to invite Laurent Bopp to become regular member of the DMC.

Action: Alessandro to approach Laurent Bopp to become regular member of the DMC.

Any other business:

Catherine proposed to discuss compliant data. Ed Mawji responded that the issue for compliant data is that it has not been intercompared. Reiner noted that the DMC and S&I Committees are aware of the problem and are looking for solutions. A possibility is to intercompare with nearby stations.

Decision: Request for Compliant Data – IPO to send the S&I Committee any proposal for compliant data so that the S&I can resolve intercomparison issues in advance.

Venue for next SSC meeting

Two countries offered to host the 2014 SSC meeting: Canada (Maite Maldonado) and South Africa (Alakendra Roychoudhury). Can one host delay their offer for one year? Maite responded that the issue in postponing a meeting is the Arctic Cruise in 2015. Maite will be in the cruise so it might be difficult for her to organize the meeting. Roy responded that a 2014 meeting in South Africa would be a brilliant opportunity to make GEOTRACES research much more visible in South Africa. The idea is to take the opportunity to do some training and engage other departments and governmental funding agencies. The sooner it happens the better. Alessandro mentioned that it would be very helpful for South Africa to host the meeting this year specially to get ship time in the future. Catherine added that if the meeting is held in South Africa, it would be good to arrange a couple of days of broad seminars to convince stakeholders. Bob noted that the research-funding situation is not very good in Canada as the government is trying to eliminate fundamental science. Organizing the meeting in Canada could help Canadian colleagues, giving more visibility to their work. Maite added that if the meeting were held in Canada in 2015, it would have to be held after the cruise, for example, at the beginning of November 2015. Are there any problems with having it in November? The consensus was that this is acceptable.

Roy added that if the meeting is organized in South Africa, there are two possibilities for the venue: Cape Town or Stellenbosch. He proposed the dates of 8-12 September or 27-31 October because during these dates there are no lectures, which would make it easier for students to attend GEOTRACES seminars. Olivier asked whether there are any budget constraints to holding the meeting in South Africa?

Action: Ed Urban and Elena to prepare a budget for hosting the meeting in South Africa.

Action: Roy to send possible dates to IPO with description of advantages and disadvantages of each option.

Action: Elena to set up a doodle poll to query about the 2014 SSC meeting dates.

Decision: 2014 SSC meeting to be hosted in South Africa in 2014 and in Canada (Vancouver) in November 2015.

Action: Ed Urban to send a thank you letter to Ralf Tiedemann.

Meeting adjourned 15:15.

Annex 1. Approved text for the IDP Download Agreement

Users of the GEOTRACES Intermediate Data Product are expected to abide to the following rules regarding citation:

The GEOTRACES program is keen to ensure that the very significant effort and expertise involved in making trace-element and isotope measurements is acknowledged as fully as possibly in subsequent publications.

To the greatest extent possible, please cite all relevant publications from researchers that made the measurements you use in your work. Details of publications that should be cited are provided point-by-point in the IDP dataset (in the ODV and ASCII versions) and will be updated on the online database as new papers are published. Where your research deals particularly with data measured by a single group of data originators, you are invited to please contact that group to discuss your work prior to publication and jointly consider the synergy and mutual benefit of co-authorship where appropriate.

Where other constraints prevent citation of all relevant publications, for instance where there is a journal limitation on the maximum number of publications that can be cited, or if the dataset is only used in a minor supportive way, please cite the data compilation itself (as below). In such cases, also please cite any original individual papers that you rely on particularly heavily for your research and interpretations.

Before downloading this dataset, please check the box indicating your agreement with this citation policy and further indicating that you will not distribute downloaded data to any third party.

Citation of database:
Mawji et al.: "GEOTRACES Intermediate Data Product 2014", DOI XXXXXXXXXX (to be updated in February 2014 with IDP release)