

PAGES SSC MEETING
8-9 August 2005—Beijing, China
MINUTES

PRESENT SSC: Rick Battarbee, Julie Brigham-Grette (Chair), Jérôme Chappellaz, Eystein Jansen (16:30 on 8 Aug.), Peter Kershaw, José Ignacio Martínez, João Morais (IGBP), Dan Olago, Ashok Singhvi, Frank Sirocko, Olga Solomina (12:00 on 8 Aug.), Ryuji Tada, Ricardo Villalba, Pinxian Wang, Heinz Wanner (Swiss Director)

PRESENT IPO: Leah Christen, Thorsten Kiefer (Executive Director)

ABSENT: Carole Crumley (SSC), Christoph Kull (IPO)

GUESTS: Dave Anderson (Initiative, 9 Aug.), John Dearing (Focus 5, 9 Aug.), Denis-Didier Rousseau (Initiative, 9 Aug.), Colin Prentice (AIMES, 9 Aug.) Ralph Schneider (IMAGES, 8 Aug.) Herman Zimmerman (NSF, 8-9 Aug.)

1. INTRODUCTION & MISCELLANEOUS

SSC members introduced themselves. Brigham-Grette welcomed everyone and thanked Olago for the excellent SSC meeting in Kenya in 2004.

1.1 Approval of Minutes from Past Meetings

SSC looked over the minutes from Naivasha (SSC) and Bern (EXCOM) and they were approved without comment.

Decision: Minutes are approved.

1.2 Office Staff

Kiefer provided an overview of office staff responsibilities. Now that there is a permanent Executive Director, Christoph Kull (Science Officer) will go back to 80% and Leah Christen (Project Officer) to 70% after the OSM. Kiefer mentioned the great work that Christian Telepski (Webmaster) had done in setting up the OSM website and developing the OSM abstract administration software.

Brigham-Grette officially welcomed Heinz Wanner, PAGES new Swiss Director and replacement for Thomas Stocker.

1.3 PAGES IPO

Selma Ghoneim (Finance and Office Manager) is leaving the IPO and will be replaced in October. Advertising for her position is already underway.

1.4 Visiting Scientist Program

Kiefer and Brigham-Grette gave an overview of the Visiting Scientist Program and the type of support that PAGES can offer. Discussion about the goals of the program and the rewards for PAGES followed. There is currently no guest scientist at the IPO. An invitation to visit was again extended to the SSC. *Wanner:* IPO is close to the University of Bern, with library, computer center and other facilities that guest scientists can use.

Kiefer: Program needs to be publicized. Guest scientist could be useful for editing post-OSM products.

Brigham-Grette: SSC could get involved in inviting colleagues to visit.

Decision: Maintain the Visiting Scientist Program at the current level of support.

2. FINANCES

2.1 Funding Overview

Kiefer reported that PAGES funding is secure until July 2006 from the US (NSF) and August 2006 from the Swiss (SNF) National Science Foundations. PAGES will submit one proposal to the two foundations. Wanner explained that the SNF Division of Natural Sciences is responsible for reviewing the proposal but that the funds then come from the Division of Foreign Affairs. The idea is to have the Swiss and US funding in phase. He also stressed the desire to have closer contact between the two foundations, and that the proposal is reviewed in concert. Zimmerman mentioned that there are plans to visit the SNF.

Brigham-Grette: PAGES has received flat funding for a long time and so has needed to reduce initiative and workshop funding to make up the deficit. Optimizing funding is difficult without taking inflation into account.

Zimmerman: For the first 4-5 years, the PAGES Directorship was voluntary, so there was no salary in the operating expenses like there is now.

Brigham-Grette: There is also a constant battle with the exchange rate.

Kiefer: Due to the exchange rate, the US contribution to PAGES is now below 40%.

Discussion on the US\$ account issue again. Nothing has changed at the university to make this possible.

Chappellaz/Battarbee: There was an attempt to get support for “IMPRINT”, a research project submitted to the European Community (6th Framework Programme), but it was turned down. PAGES was to be responsible for outreach and dissemination activities.

Kiefer/Battarbee: This established PAGES as a potential partner for dissemination (e.g. website and newsletter production). Should keep this in mind for the future.

Morais: Difficult to get EU to fund infrastructure, since they prefer that this is funded nationally. They prefer to fund science. However, PAGES should try to target ESF. IPO should explore workshop and meeting support that facilitates synthesis (contact John Marks). Willing to help.

2.2 Budget 2005

Kiefer briefly went over the budget, explaining that this year is dominated by OSM expenditures.

Decision: Budget is approved.

2.3 Budget 2006

SSC looked briefly at the draft budget for 2006, which will be discussed at the EXCOM meeting in December.

3. PAGES PRODUCTS

Kiefer stated that in terms of products, the newsletter and website are very well received and are PAGES strong point. The web calendar is now more popular than the homepage, indicating that it is being bookmarked. The majority of visitors to the website are from the US.

3.1 General Website

Kiefer explained that the website is currently being redesigned, and the look and structure will change to make it more transparent for newcomers. SSC members had been asked for their comments on the website and there was some discussion about the results. The Products and Services section is being reorganized and the Science Highlights section is being dropped.

Sirocko: Web statistics should be better documented, elaborated on and used in the next funding proposal.

Tada: Need to know how many hits from which countries and what downloads over time.

3.2 PAGES Product Database

No specific comments.

3.3 PAGES People Database

SSC members commented that they use the people database several times a day to find addresses.

Martínez: There are many people without email addresses. This should be a requirement.

Christen: Some people, especially in developing countries, do not have email addresses. In some cases, no email address indicates that we have had mail returned undeliverable. IPO will look into it.

3.4 National PAGES

There was some discussion on how to increase participation in National PAGES.

Kershaw: National communities should take responsibility.

Kiefer: PAGES National Representative should coordinate this.

Sirocko: Contact people to come to the IPO for one week to put together a National PAGE.

Brigham-Grette encouraged each SSC member to review their National PAGES and update them.

Wang: PAGES should review the pages and provide feedback, reminding people to update.

3.5 Other Website Items

The removal of the Science Highlights section was discussed.

Kershaw: Could have a section highlighting important papers that have come out.

Kiefer: This would need regular updating and we do not have the resources for it.

Singhvi: Very hard to make it comprehensive. Missing papers would be a problem.

Christen: New papers coming out should be science highlights on National PAGES. Papers of particular importance could be included in the News section.

Martínez: Could have “News and Views”.

Kiefer: Too much work for the IPO staffing level.

Singhvi: Could have a clipboard to share science ideas and increase interactivity with PAGES.

Kiefer: Again, no facilities for this.

Kiefer mentioned that the Jobs section is very popular. The idea is for it to become the place that everyone goes to for job advertisements in paleoscience. It will become easier to use with the new design and hopefully more prominent. The service will continue to be offered free of charge.

Sirocko: Should have links to other job pages as well.

3.6 Newsletters

Kiefer reported that in the last 3 weeks, there have been 1,400 downloads of “Chinese Paleoscience”, the latest newsletter issue (hardcopy circulation of 3,400) and 600 downloads of “Future Paleoscience” (April). All future special issues will now also include an open section to encourage people to submit their latest research. It was emphasized again that there are many people who can only get access to paleoscience through the PAGES newsletter. Brigham-Grette is to make contact about an ESH newsletter. Other ideas for special issues included one on polar paleoresearch.

3.7 Special Issues

Kiefer outlined. No specific comments.

3.8 Books

Battarbee reported that the PEP III Book has sold well.

3.9 Posters

Kiefer outlined. No specific comments.

3.10 PAGES Flyer

Kiefer outlined. General consensus was that a flyer is important for distribution at meetings.

3.11 Other Product Ideas

None suggested.

4. WORKSHOPS

Brigham-Grette referred SSC members to the list of funded workshops, initiatives and products summarized in the meeting documents and the list of pending workshop proposals that EXCOM would decide on at their evening meeting (p. 30-31) and invited comment.

4.1 2004 Funded Workshops, Initiatives and Products

Singvi reported that the Indian Monsoon workshop (May 2004) had Indian and international attendance and that a review and synthesis product is in press.

Olago reported that the African Paleoperspectives workshop (July 2004) was a great success and resulted in some good networking. A couple of papers will come out in Quaternary International and a second suite in the African Journal of Aquatic Sciences. A new START proposal will be submitted on late Quaternary climate changes on the West African coast.

4.2 2005 Funded Workshops, Initiatives and Products

Kershaw reported that the Chapman conference (Feb. 2005) was very useful, particularly because there was a mix of people, including marine and terrestrial, whose paths seldom cross. A report on the first Southern Hemisphere Deserts workshop (Australia 2003) is available. The second workshop will be held in Oct. 2005 in Chile. He also mentioned that he made a PAGES presentation at the PAGES/CLIVAR co-sponsored Australian Academy of Science meeting "Reconstructing Past Climates for Future Prediction in the Australasian Region" in Canberra, Australia (June 2005).

Wanner reported that the NCCR Summer School begins soon and that there is a good line up of teachers this year.

Sirocko reported on a DEKLIM meeting in March (not funded by PAGES), which was attended by 220 people. It produced predictions on climate with an international focus for political use and was well received.

Brigham-Grette reported that she spoke on behalf of PAGES at a Rapid Landscape Change workshop in Whitehorse in June. A lot of new data on high-resolution records in the Yukon, Canada and Alaska were presented, focused on arctic landscape change in the Holocene.

4.3 Pending Workshop Proposals

The workshop proposals that EXCOM would decide on at its evening meeting were discussed.

4.4 Strategic Discussion about Activities and Workshops in 2005/2006

The current funding policy of PAGES, giving preference to developing country participants, was discussed. It was pointed out that in many cases workshop organizers need funding to secure first class speakers from developed countries. In some cases, they already have funding for developing countries. Should the policy be changed?

Sirocko: Many excellent people from developed countries have no funding to attend meetings. Policy should be changed.

Singhvi: Agree. May be a little premature since PAGES future direction has not yet been determined but the policy should be changed. Go by merit.

Kershaw: Main aim is to further science in developing countries. This can often be achieved by supporting developed country scientists to attend meetings there.

Brigham-Grette: People should feel they can approach us. Structure should not be too rigid.

Morais: Not all of the other IGBP projects have the resources to provide workshop funding. PAGES sets a good example and should continue to provide support and seed money for initiatives.

Wang: Should become proactive to get people to hold PAGES-related workshops.

Zimmerman: Need to focus on PAGES science. Agree that workshops should be suggested by SSC to answer PAGES-relevant questions.

Sirocko: Go back to PAGES roots and decide where the funding needs to go. SSC then becomes less of an administrative and more of a steering committee.

Brigham-Grette: Need to better publicize that PAGES logo can be used even if no financial support is given. How do we identify PAGES-related research?

Zimmerman: Used to be that an SSC member or Focus Leader had to be involved in the workshop to claim it as PAGES.

Wang: Problem that it is often the same scientists being invited. Or there are no new people available, so senior scientists are funded. Need to find the young people for the future.

Singhvi: Support workshops that feed into PAGES initiatives and have future potential. Set criteria and be proactive. Criteria should include a ban on funding the same people within 5 years.

Others: Suggest 3 years.

Battarbee: Need to revisit the workshop proposal criteria. We should require the same format from everyone so that we can compare them.

Kiefer: New web design should allow us to set up a form that can be submitted on the website.

Decision: Workshop funding criteria to be changed: SSC member involvement required, support of developed country scientists possible, usually no support for same participants within 3 years.

Action: IPO to design workshop proposal application form.

Solomina joined.

4.5 PAGES Open Science Meeting: Update & Last Arrangements

Brigham-Grette, Kiefer and Christen went over last minute changes to the program and planned post OSM publications were discussed.

5. RESEARCH REPORTS

5.1 PAGES Research Reports

Brief reports on Foci activities were given, as follows:

IMAGES –Schneider, Wang

Recent cruises with the research vessel “Marion Dufresne” were undertaken in the Indonesian Gateway (“Marco Polo cruise”) and the western Pacific around New Guinea (“Pecten” cruise). Future targets for cruises are the Southern Ocean (related to the International Polar Year), Western Pacific Warm Pool region, and Southern Chilean margin and fjords (although there are political problems with permission). The general difficulty for IMAGES is to raise funding for the expensive ship time (especially after a recent insurance increase of 200%). It is not a problem to obtain funding for analysis. Discussion resulted about the involvement of IMAGES in activities on ocean-land linkage. Kershaw mentioned that one positive example is the Indonesian-Australian Region. Kiefer and Brigham-Grette urged for more land-ocean activities to provide opportunities for synergies, Sirocko commented that these would support the terrestrial paleoclimate community. Wanner mentioned that they would have to be supported by modeling.

Wang reported that teaching cruises were a success and in general a good outreach concept. He suggested that IMAGES was too focused on the operational side and proposed that IMAGES become a multi-platform program.

PANASH

PEP I – Brigham-Grette, Villalba (advances in Argentinean research related to PEP 1)

PEP II – Wang, Kershaw, Tada

PEP III – Battarbee, Olago

The PAGES Pole-Equator-Pole efforts of the past 7-8 years have served as a successful means of community building between research groups working on the southern and northern hemispheres. As an outgrowth of this effort and in line with the interests of the atmospheric scientists, the PEP transects have moved on toward issues of interhemispheric dynamics, especially highlighting drivers in the climate system.

CLIVAR/PAGES – Wanner (8 Aug.), Jansen (9 Aug.)

Jansen defined the main themes of the CLIVAR/PAGES intersection based on the Working Group meeting in Vancouver, Nov. 2004 and published in PAGES newsletter (e.g. issue 13/1). He suggested that activities on tropical-extratropical links could be based on similar activities to a US CLIVAR group on tropical Atlantic variability led by Larry Paterson, John Chiang, and Jean Lynch-Stieglitz.

Wanner reported on the first CLIVAR/PAGES workshop planned for June 2006, which will focus on the last 2,000 years. An exchange of data and methodologies is needed and the long-term concept is to go beyond temperature reconstructions towards precipitation and air pressure, and regional-scale reconstructions.

Olago mentioned that the African CLIVAR group has a strong interest in paleoclimate reconstructions for Africa to supplement the short instrumental record.

Polar Programs – Brigham-Grette, Chappellaz

Chappellaz reported on his attendance as a PAGES ambassador at the CLiC conference in Beijing, April 2005. The CLiC community is focused on the last 25 years where satellite data are available but there is potential for topical overlap with polar paleoresearch. There is general interest in a PAGES/CLiC

intersection on issues surrounding sea level, sea ice, atmospheric and oceanic circulation, abrupt climate changes, terrestrial cryosphere, etc. Chappellaz identified paleo-permafrost and sea ice as the prime issues to tackle in a PAGES/CLiC intersection. He suggested that the way to push collaboration would be to hold a joint conference.

Past Ecosystem Processes & Human-Environment Interactions – Battarbee, Dearing (written report)

The program has been very active this year, with major workshops within the separate activities, a dedicated Gordon Research Conference for all Focus 5 activities, and completion of two sets of special journal issues. A Focus 5 Steering Group meeting was held in London, in Jan. 2005 that marked a shift towards more integration across the sub-programs, regionalization of data and promotion of links with simulation modeling of human-environment interactions. A “Regional Environmental Change” special issue on the Focus 5 session at INQUA, Reno, 2003, has now been submitted, and includes two papers from Focus 5 leaders that document the need, scope and future of Focus 5 science. Dearing represented Focus 5 activities at (i) the Focus 5 Gordon Research Conference in California; (ii) a Dahlem IHOPE workshop; (iii) a HOLIVAR Meeting in Orebro, Sweden; (iv) the Nordic Geographers Meeting in Lund; (v) at the Université d’Orléans; (vi) and the Swiss HITE meeting in Zurich. A second Gordon Research Conference for Europe 2008 has been proposed. This would form the focus for integration across activities and the regionalization of datasets. One intended outcome would be a major publication summarizing the long human-environment perspective for key regions of the world and the implications for understanding the present and future.

Miscellaneous

Martínez reported about activities in Colombia, including the “Amadeus” cruise to the eastern equatorial Pacific in collaboration with a French group. He also asked for PAGES endorsement, and use of logo, on a *Palaeo-3* special volume, accepted by Elsevier, on "Late Quaternary Paleoclimates of tropical America" (Eds. Martinez, Spero and Berrio). SSC unanimously approved the request.

5.2 Integration of PAGES and IGBP Programs

(9 Aug.) Brigham-Grette gave a presentation on IGBP and an overview of AIMES. Prentice gave an overview of AIMES objectives (p. 33) and reported that it is setting up an institutional network, with NCAR taking the lead. A basic Steering Committee has been established. Links with paleoscience are sort and Chappellaz has been asked to serve on the committee. AIMES is working on a draft science plan, continuing some ideas and activities from GAIM, and reaching out to other ESSP partners. The first AIMES SSC meeting will be held in Colorado, 17-20 Nov. 2005.

6. STRATEGIC DISCUSSION I

6.1 Funding & Broader Impacts of PAGES Research Structure—lessons from the failed proposal

A new 4-year SNF-NSF proposal is needed as soon as possible. The failed NSF grant (2005-2009) and the reviewers’ comments were discussed, and then the SSC heard comments from Zimmerman, NSF representative. Zimmerman stated that he plans to arrange a meeting with the SNF. The Points of Agreement from 1996, a simple exchange of letters that the two funding agencies would support PAGES for a certain time period and level, should be updated. Wanner thanked Zimmerman for his input and his support, and reiterated the desire for closer contact between the NSF and SNF.

The role of PAGES in the context of IGBP was discussed. Morais pointed out that despite having separate legal entities, PAGES is still under the sponsorship of IGBP. Within IGBP Phase II, there are

raised expectations and a higher level of responsibilities for PAGES in leading the paleoclimate community and interacting with the other core projects.

There was a discussion of Focus 5 and the human impact strand of PAGES, and its perceived relevance by NSF and SNF, who wish PAGES to concentrate on paleoclimate. Battarbee pointed out that parts of Focus 5 might not fit within the original remit but that they intersect with IGBP themes. Kiefer noted that “paleoenvironment” was the word used in the original work proposal. Morais mentioned that IGFA was asking for a broader range in climate change research, incorporating more human aspects. He suggested that, with the future goal to converge all ESSP projects into one, PAGES might not want to be so dependent on the stipulations of two major funders. Wanner repeated again that branching out to other funding sources could reduce IPO efficiency. Wang suggested not disturbing the current structure but possibly looking for additional funding if PAGES has regional nodes.

Brigham-Grette reported on the feedback received at the Amherst meeting. Some of the scientists did not realize that the projects they work on have their roots in PAGES. Also, they could not recall PAGES sessions at AGU, even though there has always been one, because they did not connect them with PAGES. “PAGES” needs to be in the title. The group liked the idea of an annual summer school that alternates between the US and Switzerland, and thought the speaker series was a good way to increase the visibility of paleoscience.

The SSC then talked about PAGES research structure, the purpose and function of Foci, and possible alternative groupings. One suggestion was to keep the programs but to repackage them, another to ask new questions within or between the existing Foci. It was pointed out that the current Foci are a mix between programs and scientific topics, with a mix of objectives and initiatives. Further discussion is continued under 7.2.

Tuesday, 9 August 2005

6.2 PAGES Research Structure 2006 & Beyond

Villalba reported on the Regional Variability Initiative and asked for PAGES endorsement. This was unanimously given.

Kiefer reported on the IGBP Fast-track Initiative on Ocean Acidification. A discussion about the relevance of long million-year timescales to PAGES resulted. The character of IGBP Fast-Track Initiatives involving several IGBP core projects and targeting a quick joint product without invoking new research was clarified.

6.3 PAGES & Other International Programs

Morais stressed the importance of PAGES being a part of and interacting with other IGBP core projects and programs within ESSP. The 2nd ESSP Open Science Meeting, a follow-up to the 1st meeting held in Amsterdam in 2001, will take place in Beijing, 9-12 Nov. 2006. The 4th IGBP Congress, coming four years after the 3rd meeting in Banff in 2003, will be held in South Africa in 2007.

6.4 PAGES Outreach—future strategy

It was unanimously agreed that outreach should be a focus of the new funding proposal.

The format and structure of the PAGES newsletter was discussed. Kiefer posed the question as to whether submissions should be reviewed externally, or by the IPO and guest editors, as is currently the case. It was agreed that it should continue as before but with outside help requested if necessary.

6.4.1 PAGES Summer School

The idea of a PAGES Summer School was still very popular. Wanner pointed out that there are 4 divisions at NCCR Climate that rotate the Summer School and not all of these fit within PAGES. It would therefore be necessary to discuss the logistics but he is conceptually agreeable to the idea.

Battarbee: HOLIVAR Summer School teachers would be available if PAGES wished to incorporate them.

6.4.2 PAGES Speaker Series

The SSC is still in favor of the PAGES Speaker Series.

Olago: Add Africa to the list of regional speaker sets, even if it is introduced at a later stage due to finances.

Wang: Combine the summer school and speaker series. Have smaller, regional summer schools consisting of lectures, using PAGES logo. These would be cheaper and we could have more.

Battarbee/Wanner: Summer schools usually consist of lectures by international speakers, workshops and practical work, as well as posters, and run for 1-2 weeks.

Battarbee: Could have 2 different types of schools: the standard, larger type to be held in the US and Switzerland, plus regional schools in developing countries that are more lecture-based and targeted at specific regions, combining invited speakers from the wider PAGES community with local speakers.

6.4.3 PAGES Booths at large conferences

Kiefer reported that the cost of an AGU booth plus furniture and equipment is about \$4,000. The booth must be professional to compete with the others. It was generally agreed that it is too premature to consider now but could be an option for 2006.

Zimmerman: Consider displaying at EGU as well.

Olago/Sirocko: In the meantime, put out flyers and display a poster at the PAGES AGU session. With good speakers, this may get more attention than a booth.

Zimmerman: NSF has an avenue at AGU for some of its projects. PAGES flyers and newsletters can be displayed at the NSF booth.

Decision: PAGES will not rent a booth at AGU this year but will display products at the PAGES session and NSF booth.

7. STRATEGIC DISCUSSION II

7.1 Specific Community-driven Proposals for New Scientific Activities

(Wanner, Solomina, Jansen absent) Four community suggestions for initiatives were presented (p. 36).

- Denis-Didier Rousseau – Loess Belt Initiative: East-west transects (latitudinal loess sequence). Could slot into Focus 1.
- Dave Anderson – Paleo-Data Management: NOAA wants to make paleodata more useful in addressing regional aspects of climate and environmental change. Idea is to produce theme-based (e.g. Arctic) or region-based (e.g. ENSO) themes. PAGES could mediate between NOAA and potential data hosts and the user community.
- Tarasov, Brovkin, Wagner (presented by Kiefer) – "Man, Trees and Climate System" (MATRICS): Suggests to (1) reconstruct dynamics of forest cover during the Holocene (pollen record compilation), (2) separate anthropogenic and natural factors (through the archeological record), (3) investigate on consequences for the carbon cycle and climate by paleoclimate data and modeling), and (4) validate model results. Could slot into Focus 5 and AIMES. Feedback: Should not be designed to test Ruddiman hypothesis.
- Irka Hajdas (presented by Kiefer) – Improvement of radiocarbon-based chronology("The last 50,000 years: 14C time scale as a tool for correlation of terrestrial, marine and ice core records"): Suggests

(1) calibration curve before 26 ka and (2) database on marine paleo-reservoir ages (both by incorporation of new records/archives from tephrochronologists, archaeologists, and palaeoclimatologists), (3) synchronization of paleorecords on the basis of series of ^{14}C ages. Involve tephrochronologists, archeologists and paleoclimatologists in establishing new records and archives. Discussion resulted in general agreement that paleo-research relies on the quality of its chronologic control and that PAGES should support efforts for its improvement.

7.2 Funding & New Proposal

Discussion continued where it had left off in 6.1 on the previous day and Brigham-Grette outlined the requirements for the NSF application. Wanner started by saying that the same proposal needs to be submitted to two different science foundations. There should be an introductory paragraph or cover letter stating this and covering the regulations between SNF and NSF.

Action: Wanner to find out from SNF if the NSF format can be used for submission to them.

(Zimmerman and Morais absent)

The SSC then discussed PAGES existing Foci and possible alternative groupings at length, and came up with the following:

1. Modes of Variability and their Interactions in the Climate System (data collection and past time series, thresholds)
2. Thresholds in the Climate System
3. Land-Ocean-Ice Dynamics and Linkages (IMAGES/PAGES)
4. Forcings in the Climate System
5. Model Data Intercomparisons of Climate of the Last 2000 Years (PAGES/CLIVAR (PMIP, consistence and reducing errors, modeling and paleo, calibration of proxies, forcings)
6. Past Human-Climate-Environment Interactions

Villalba felt that the Foci should be broad enough that everyone in the paleo-community could find a place. There was general agreement.

Overarching Questions

Chappellaz and Sirocko were asked to re-work the overarching questions from the 2001 proposal. They presented the following 4 questions:

Climate Variability: How have global climate and the Earth's natural environment changed in the past? What are the main modes of variability at orbital to sub-decadal time scales, and how do they relate to each other?

Climate forcing and sensitivity: What is the history of the main climate forcing factors (insolation, greenhouse gases, solar and volcanic forcings and aerosols) and the sensitivity of the climate system to these forcings? What are the causes of natural greenhouse gas and aerosol variations? In what precise sequence have changes in forcings, surface climate, and ecological systems occurred?

Thresholds: What are the causes/thresholds of the rapid transitions between quasi-stable climatic states? In particular, what are the causes/thresholds of abrupt climatic and environmental events on time scales that are relevant to societies?

Anthropogenic versus natural: To what extent and since when has human activity modified climate and the global/regional environment? How can anthropogenically induced change be disentangled from natural responses to external forcing mechanisms and internal system dynamics?

PAGES Foci

Jansen, Solomina and Wanner were asked to re-work the 6 ideas for Foci that had been generated during earlier discussion. They presented the following 4 Foci (data and proxy issues to be added as cross-cutting themes):

Past Climate Forcings

- Improved, extended and consistent time series of GHG, solar, volcanic, aerosols and land use?

Programs: Initiate new program

Reconstructions and Modeling of Regional Climates and Modes of Variability

- Global coverage of high-resolution, well-dated reconstructions of state parameters (T,R,P) and modes of variability, based on natural archives and documentary data.
- Data-modeling intercomparisons as a means to understand past dynamics.
- Low-to-high latitudinal linkages and teleconnections.
- Special focus on the last 2000 years.
- Low-to-high latitude and longitudinal linkages and teleconnections.

Programs: CLIVAR, IMAGES, PMIP, New activity PRIP? LAND RECONSTRUCTIONS? PANASH

Land/Ocean/Cryosphere Dynamics and Linkages

- Abrupt changes and associated thresholds, e.g. MOC, droughts, ice sheet stability, land surface responses and processes, monsoon changes and dynamics, permafrost changes.

Programs: PANASH, IMAGES, IPY, PMIP, LAND RECONSTRUCTIONS, CLIC

Past Human-Climate-Environment Interactions

- To be written by Battarbee and Dearing.

Programs: HITE, LIMPACS, LUCIFS

8. FORTHCOMING MEETINGS

8.1 Meetings/Workshops—General Remarks

Planned meetings and workshops were discussed. It was proposed and agreed upon that the 3rd Open Science Meeting be held in the US at the end of the next funding period. Singhvi stated that if the OSM were not to be held in the US, India would be prepared to host it.

Decision: Third OSM to be held in the USA at the end of the next funding period.

8.2 Special PAGES Sessions

Special PAGES sessions at upcoming meetings were discussed.

9. SSC: MEMBERSHIP & DUTIES

9.1 SSC Members

Olago and Singhvi are rotating off the SSC at the end of 2005, after having served two 3-year terms. Brigham-Grette will also have served two terms at the end of 2005 but could be reelected for a third term under the special circumstances described for the position of Chair.

9.2 New SSC Members

Brigham-Grette and Zimmerman left the room while the SSC discussed the special situation of the renewal of Chair. A unanimous decision to re-elect Brigham-Grette was made and she accepted.

Brigham-Grette presented EXCOM's recommendations for new SSC members, emphasizing the need to achieve a balance of disciplines and geographical representation. Morais pointed out that according to ICSU, SSC members are really sitting us individuals and not representing nations. It was suggested that Mohammed Umer and Indra Bir Singh replace Olago and Singhvi. SSC agreed. It was also suggested that Cathy Whitlock and Bette Otto-Bliesner replace Crumley and Tada (leaving end of 2006) and that they already join the SSC at the beginning of 2006. This would increase the number of SSC members to 18 for one year. SSC agreed. Tada offered to rotate off one year earlier, if needed.

Discussion on the idea of Ex-Officio, or Corresponding Members followed.

Decision: Brigham-Grette is re-elected as Chair for another 3-year term.

Decision: EXCOM's recommendations for new SSC members are approved.

Action: IPO to send SSC nominations in time for IGBP Officers Meeting (19-21 Sep. 2005).

Decision: Brigham-Grette to email with SSC about who is to replace Singhvi on EXCOM.

9.3 SSC Member Nomination

Brigham-Grette, Kiefer and Christen described the broadly advertised call for new SSC members—on the website, on listservers, and by email—and the desire to be more transparent about SSC elections. The SSC then discussed if the current requirements for nomination are adequate. It was decided that one letter of nomination and two letters of support are adequate, and that self-nominations are not allowed.

There followed a discussion on the appropriate length for an SSC term.

Solomina: 6 years is too long. I offer

Morais: IGBP regulations state that the term is for “up to 6 years”.

Wang: 4 years would be good.

Olago: Why is 6 years too long? It takes a long time to establish a vision.

Solomina/Wang: Other countries need representation.

Brigham-Grette: Could have a 4-year term, followed by 2 years as a corresponding member.

Morais: Better not to define the length of term.

Brigham-Grette: This will be an action item for EXCOM.

Decision: One letter of nomination and two letters of support are required. Self-nominations are not allowed.

Action: EXCOM to decide on length of SSC term at their next meeting.

10. VARIA

10.1 New IPCC Report—paleo chapter

Jansen gave an overview of the paleo chapter in the new IPCC report. He and Jonathan Overpeck are Coordinating Lead Authors. Olago, Solomina, and Villalba are 3 of the 13 Lead Authors. Areas that will have to be covered in the future are:

1. Proxy-based forcing series—solar, volcanic, aerosol—to combine model experiments with paleoclimate data. Forcing is crucial to understanding the whole system.
2. Regional climate change for the last 1,000-2,000 years and the whole of the Holocene. There is a lack of regional time series. Key data in the Southern Hemisphere and tropics are needed.
3. PMIP approach to modeling the last millennium. Need consensus on how this is done.
4. Teleconnections, especially between low and high latitudes.
5. Range of climate sensitivity. Paleoclimate data can inform about sensitivity but it is not straightforward. Improving knowledge on climate sensitivity based on paleodata and modeling

and better constraints of the time slices being worked on, e.g. Last Glacial Maximum in tropics and extra-tropics.

10.2 Upcoming SSC & EXCOM Meetings

Villalba presented the current idea to organize the next SSC meeting in Mendoza, Argentina, alongside an already proposed workshop on regional variability, in order to increase PAGES visibility in South America. He suggested October 2006. The IPO would work together with Villalba on the details. SSC accepts Villalba's invitation.

Decision: The next SSC meeting will be held in Mendoza, Argentina in October 2006. Exact dates and venue to be confirmed.

Decision: The next EXCOM meeting will be held alongside AGU on Sunday, 4 December 2005 in San Francisco. Venue to be confirmed.

10.3 Open Discussion

Brigham-Grette thanks Olago and Singhvi for their invaluable input on the SSC over the last 6 years. The meeting is concluded.