

ITEX 13 – Miami Workshop Report

The 13th ITEX Workshop was held at the Fairchild Tropical Botanic Garden, Miami, Florida, USA from 13-15 January 2006, and hosted by Steve Oberbauer, Florida International University. This was the first Workshop since the very successful meeting at Cheena Hot Springs near Fairbanks, AK in September 2003. The meeting was attended by 20 ITEX scientists representing seven countries, including Australia (see list of participants).

Community synthesis paper published in PNAS

The meeting started with the announcement from Greg Henry that the ITEX plant community synthesis paper was to be published electronically in the Proceedings of the National Academy of Sciences (USA) on January 20. The paper had been highlighted in the news section of the journal and was under embargo for the press as of January 12. It is currently available at (www.pnas.org/cgi/content/short/103/5/1342) or from Greg (ghenry@geog.ubc.ca). All agreed that it was wonderful to finally see this excellent synthesis effort in print.

Steve Oberbauer reported that the NATEX carbon flux synthesis was nearly complete and would be submitted this spring for publication. This synthesis examines the effects of the warming experiments on net ecosystem exchange at North American ITEX sites, as measured by the static chamber technique.

Reviews of research at ITEX sites – state of the Network

The first day of the meeting was taken up with reports from the sites represented. (See the list of abstracts posted on the ITEX web site). The presentations stimulated much discussion, which resulted in extending the length of the papers and moving the poster sessions to the following morning. Highlights included:

- an overview of the new studies at Barrow by Paulo Olivas and Steve Oberbauer as part of a biocomplexity project to examine warming and changes in hydrology on carbon fluxes;
- a very interesting survey of NEE by Gus Shaver across a wide variety of tundra ecosystems that showed 82% of NEE variation could be explained by LAI, PAR and air temperature;
- results from studies at Finse, Norway by Kari Kanderlud and Ørjan Totland that show the importance of species interactions in the responses in the warming experiments;
- species interactions were also a focus in new species removal experiments at Toolik Lake started by Donie Bret-Harte;
- the continued studies on the Tibetan Plateau by Julia Klein, where warming and grazing management decisions are interrelated;
- an overview of the results from the FRAGILE project by Lis Cooper, which concluded on Svalbard, showing interactions between warming, fertilization and goose grazing: warming alone had little effect in the wet graminoid systems;
- results from the Faroe Islands showed the warming effect of the OTCs was greatly diminished in high winds, unfortunately common on the Faroes, but growth effects were still detected;

- first results from a set of studies on effects of climate change on vegetation of the Bogong High Plains, Victoria, Australia. The studies, presented by Andrea White, involve classic ITEX warming experiments but also studies on changes in peatlands and potential responses of alpine plants to climate change;
- reports from Ulf Molau, Esther Lévesque and Craig Tweedie were presented in their absence. Ulf also emphasized the need for further research on cliff ecology in ITEX.

The second day began with a poster session (nine posters were presented), with presenters highlighting the results. A wide variety of studies were shown, indicating growing breadth in the research connected to ITEX.

Links between ITEX and other international research programs

Greg Henry presented the objectives of the ITEX IPY proposal that had been accepted as a core project by the IPY committee (www.ipy.org/development/eoi/details.php?id=122). Discussion following showed many of the studies proposed were underway at some sites, and that protocols did exist that could be used or adapted to standardize the new research across the network for IPY. Proposals are expected to be completed for most national calls for IPY by late spring 2006, and the strong endorsement of the ITEX proposal should help secure funding.

Gus Shaver reviewed the ICARP II conference, held in Copenhagen in November 2005, and the process followed within Working Group 8, which was charged with outlining the direction for terrestrial research in the Arctic (including freshwater systems). WG 8 was co-chaired by Terry Callaghan and Torben Christensen, and ITEX was well represented in Working Group 8, with Gus Shaver, Greg Henry, Phil Wookey and Craig Tweedie as members, and Jeff Welker attending the Working Group 8 session at the ICARP II conference. The draft science plan by Working Group 8 (<http://www.icarp.dk/WGreports/WG8report.PDF>) is still under review, and comments continue to be accepted until mid February.

Phil Wookey provided an overview of the CAT-B (Circum-Arctic Terrestrial Biodiversity) program in IASC, and how it had grown out of the Feedbacks and Arctic Terrestrial Ecosystems (FATE) initiative of the first ICARP conference. At the CAT-B meeting held during the ICARP II conference in Copenhagen in November 2005, it was agreed that there was a need for broad-based biodiversity initiative such as CAT-B, and that Phil was charged with putting a proposal together for the final round of IPY, due 31 January 2006. The ITEX participants provided the same endorsement, and Phil has submitted the proposal.

Ingibjörg Jónsdóttir gave an overview of the Circumarctic Biodiversity Monitoring Program (CBMP), which is both an IPY project and a program within CAFF. ITEX has always played a role in biodiversity monitoring in CAFF and is identified as the lead network for biodiversity monitoring. Ingibjörg reviewed the development of CBMP, noting that it will serve mainly as a data gathering and trend reporting network, rather than a primary research network, such as ITEX. She briefly went through a questionnaire from Mike Gill, the chair of CBMP and it was agreed we would forward answers by early February.

Annika Hofgaard presented the IPY project on treeline dynamics (“Present day processes, past changes and spatiotemporal variability of tree distribution at the arctic border: implications and feedbacks to the arctic and global environment” (PPS); project # 360), highlighting the circumarctic objectives and noting links between the ITEX network and the developing treeline network. It was clear there would be many opportunities for joint research by ITEX and PPS researchers along the treeline-tundra ecotone and many ITEX researchers are or have been involved in treeline research. It was agreed we would continue to collaborate, and Greg Henry will attend the PPS meeting to be held in Quebec City, Canada, on 16-18 February 2006.

Bob Baxter presented a very interesting overview of recent studies of fluxes of carbon, water and energy and their controls at the landscape scale sites near Abisko, Sweden and Kevo, Finland. The project is focussed on obtaining an accurate annual carbon balance, and formed the background to the newly funded UK IPY project ABACAS (Arctic Biosphere-Atmosphere Coupling across multiple Scales). Bob, Phil Wookey, and Terry Callaghan are members of the UK research team. The variability of winter snow cover is a major factor in the proposal, and the inclusion of processes in winter and the shoulder seasons is a focus in many arctic research efforts. There were many obvious links between ABACAS and ITEX in IPY, especially in the study of controls on carbon and nutrient fluxes.

Discussions: new ITEX synthesis and IPY

The discussion of a new synthesis is a perennial part of the ITEX workshop. As in previous meetings, the discussion centered on the use of measurements in the control plots and responses to climate variability. Most sites no longer conduct individual plant measurements in the plots, but periodic measurements of species composition and abundance are made using the point frame technique. It was decided that the next synthesis should focus on changes in composition and abundance in the control plots of ITEX sites and of other sites in tundra environments with long-term data on vegetation. The synthesis will be strengthened by including as many tundra sites as possible. While species composition and abundance measures using the point frame technique is preferred, plant cover from visual estimates and biomass data for individual species or functional groups can be included in some common analyses, such as meta-analysis. Most ITEX sites using the point frame have found reasonable correlations between total hits and biomass of species. It was recommended that only total hits be used in the assessments of composition and cover.

A second round of grants has been announced by Polar Programs in the National Science Foundation (NSF) to support synthesis efforts associated with research conducted under the ATLAS and LAII programs. Gus Shaver has agreed to include an ITEX synthesis in a larger proposal he has planned for this newest call from NSF. Proposals are due by March 24.

The afternoon ended with another discussion of the ITEX IPY proposal, and how to coordinate the various measurements planned across the network. Individuals were identified to help coordinate the various aspects of the proposal:

Carbon flux studies – Steve Oberbauer

¹⁴C analyses – Phil Wookey

Nutrient flux studies (IEMs) – Greg Henry

Vegetation description/NDVI/LAI studies – Craig Tweedie/Steve Oberbauer/Greg Henry

Stable isotope and nutrient analyses – Jeff Welker

Demographic studies and trophic interactions – Ingibjörg Jónsdóttir
Cliff ecology – Ulf Molau

It was agreed that we would also provide samples and conduct measurements for biodiversity assessments linked to CAT-B and CBMP.

Communication, Data Management, the ITEX Manual and Outreach

During the final morning, discussion focused on communication issues and the use of the ITEX web site and email list. The web site was removed from the ARCUS server in Fairbanks in July due to a switch in operating systems, and the lack of a dedicated person for the web site management. Chris Shock, who had set up the web site in 2002, was no longer at UAF. The entire site was given over Greg Henry, who had it translated into PHP and placed it on the web server at the Department of Geography, University of British Columbia (www.geog.ubc.ca/itex). While the site looks and feels much the same as it did, there are parts of the site that are not completely functional, including the secured areas for discussion of synthesis papers or other issues among a smaller group of ITEX researchers, and the ability to have ITEX members update their own metadata. Greg will look into getting these and other non-functioning parts of the web site back up and running. We need to make more use of the web site for communication and discussion, and as the window on ITEX research, especially during IPY.

A short discussion on data management showed that there is still a need to ensure meta data are up to date on the web site. The database is currently out of date for most sites, and needs to be translated to work in a newer program (MySQL). If successful, IPY funds will be used to fully upgrade the web site to ensure these and other functions will work properly. The funds will also allow a part-time web programmer/manager to help look after the daily functioning of the site.

The need for an update of the ITEX Manual was discussed, although most participants felt that this would require a dedicated person. Phil and Greg will ask the Danish Polar Centre if they would be willing to publish an updated version of the Manual. Copies of the CANTTEX Manual (Canadian Tundra & Taiga Experiment) developed for monitoring tundra ecosystems across Canada were provided by Greg (it can also be accessed from www.emannorth.ca/canttex). Many of the methods in the CANTTEX Manual are based on those in the ITEX Manual.

At the 2003 Workshop in Fairbanks, Cindy Williams from UAF had video taped interviews with many ITEX researchers there with the objective of producing a short video on ITEX research. Donie Bret-Harte reported that she had talked with Cindy and that she intended to finish the video. Once completed, we will post it on the web site.

The Next Workshop – ITEX 14

An invitation to hold the next ITEX Workshop in Australia was received on Friday 13 January from Warwick Pabst, La Trobe University, who has helped to establish the Bogong High Plains site near Melbourne. He sent photos of the ITEX Viking enjoying the Australian summer. Warwick is holding a meeting with his organizing committee early in February, and will provide details on dates and potential funding at that time.

We also had an offer from Ingibjörg Jónsdóttir to hold an ITEX Workshop in Iceland in either 2007 or 2008. The general consensus at the meeting was that we would go to Australia for 2007, and to Iceland for 2008, which would be during the height of the International Polar Year.

Other Highlights

The Botanical Garden is associated with Florida International University (State University of Florida in Miami), and was a beautiful setting for the Workshop – Tundra in the subtropics. There was an amazing glass art display by Chihuly, a famous glass artist from Seattle, with pieces resembling fantastic plants embedded in display gardens throughout the site. We felt the warmth of the south Florida sun for one day, and had a winter cold front come through to drop the temperatures to 8°C by Saturday making the tundra ecologists feel a little more at home.

On Sunday afternoon we enjoyed an excursion to the Everglades National Park led by Steve Oberbauer. Steve's amazing knowledge of the natural history of the area was impressive. Alligators were everywhere, as were birds (Wood Storks, Cattle Egrets, Ibises, Anhingas, Cormorants, Herons, and a glimpse of a Snail Kite), and even iguanas at a gas station. It was a memorable afternoon.

Thanks again to Steve and Paulo for a very successful and fun Workshop in Miami.

The network is only as strong as the people involved and ITEX has great people!

Greg Henry