

## ***Meeting notes:***

### **PPS Arctic Annual Meeting: Tromsø 22-23 March 2007**

***Present:*** Frank Berninger, David Cairns, Miguel Cardoso, Ryan Danby, Nancy Doubleday, Scott Green, Greg Henry, Luise Hermanutz, Annika Hofgaard, John Jacobs, Pete Kershaw, Natalia Lukina, Ingrid Mathisen, Norman McIntyre, Gareth Rees, Oddvar Skre, Brian Starzomsky, Hans Tømmervik, Rik van Bogaert, Tatiana Vlassova.

Note: Most of the (power-point) presentations are available at <http://myweb.dal.ca/br238551/pps.html>, thanks to BS. However, some maps are included in these minutes for convenience.

**Presentation 1:** AH: introduction, background and history of PPS Arctic, outline of current status, possibilities and challenges during and beyond the IPY. What will be covered during the meeting.

Brief introductions from everyone.

AH: emphasised the desirability of involving students within PPS Arctic.

Practical details e.g. arrangements for lunch and dinner, and a warning about the change from winter to summer time on Sunday (25 March) morning.

**Presentation 2:** AH: Outline of PPS Arctic Norway. Structure, with overall aim and sub-objectives. Organisation into work packages. Outline of procedure over last two days; outline of WP1 and WP2 progress; organisation into tasks.

**Presentation 3:** GR: What PPS Arctic Norway has been doing, both over the last year and during the last two days; and specific details about WP2. This presentation included some ideas for the development of circumarctic mapping based on satellite imagery.

**Presentation 4:** IM: Specific details about PPS Arctic Norway WP1. In fact, 'Norway' will include the Kola Peninsula through collaboration with Natalia Lukina, Olga Tutubalina and others. A map of the probable study sites is shown below.



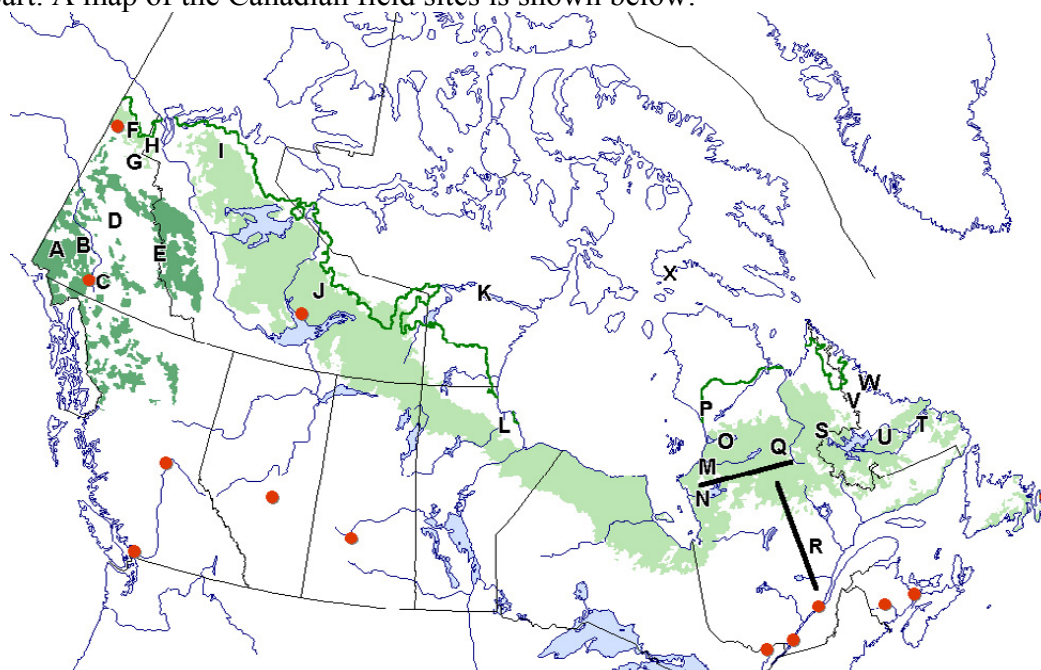
**Presentation 3a.** GR outlined the task-based approach that PPS Arctic Norway expects to take (including something about WP3), and suggested it as a model for PPS Arctic Canada and the international programme as well. A tabular summary of this task-based approach follows:

| WP | Sub-objective  | Task   | responsible      | Input from          | Output to | Milestone          |
|----|--|--|------------------|---------------------|-----------|--------------------|
| 1  | 1.1 to analyse how the structure of the boundary change along spatial and temporal scales  | 1.1.1 Develop methodology to include canopy measurements and age structure; problem of broadleaf trees | IM (AH, HT, GR)  | 1.1.3, 2.2.1, 1.1.4 |           | 2007 (N), 2008 (R) |
|    |  | 1.1.2 Extend methodology to all sites  | IM, NL           | 1.2.1               |           | 2007 (N), 2008 (R) |
|    |  | 1.1.3 processing and analysis of existing site data  | GR, AH, HT       | ---                 | 1.1.2     | 2007!!             |
|    |  | 1.1.4 investigate availability of other consistent data sources (e.g. LiDAR from Abisko)               | GR, AH to advise | ---                 | 1.1.2     | 2007               |
|    | 1.2 to analyse if there are significant differences in structure and positions present between oceanic and continental fractions of the landscape, and if so elucidate main environmental predictors | 1.2.1 Statistical analysis: select sites appropriately to environmental gradients                      | AH/IM            | 1.1.2               |           | 2008, 2009         |
|    | 1.3 to explore evidence for correlation between regeneration and climate along and across the boundary and through time  | 1.3.1 statistical analysis: need to collect regional climate data (freely available)                   | AH/IM            | 1.1.2               |           | 2008, 2009         |

|   |  |  |         |                 |       |                               |
|---|--|--|---------|-----------------|-------|-------------------------------|
|   | 1.4 analyse if the pronounced natural environmental variability of the regions induce structural stability to the boundary through time, or if it destabilise the system             | 1.4.1 statistical analysis   | AH/IM   | 1.1.2           |       | 2008, 2009                    |
|   | 1.5 explore how the present position of different structural components of the boundary relate to historic positions of the boundary   | 1.5.1 analysis of data to Holocene if available  | BH      | 2.3.1           |       | ???                           |
|   |  | 1.5.2. Analysis of recent (back to $\approx$ 1960) satellite data  | HT, MZ? | 1.1.2,<br>1.1.3 |       | 2009                          |
| 2 | 2.1 detect and monitor the forest-tundra boundary including its different structural components using the best airborne and satellite remote sensing platforms and sensors available | 2.1.1 collection of high-resolution spatial characterisation (field data and e.g. Landsat image interpretation)        | All     |                 | 2.1.3 | continuous                    |
|   |  | 2.1.2 collection of current low-resolution satellite data e.g. MODIS   | GR      |                 |       | 2007 but continuously updated |
|   |  | 2.1.3 MODIS algorithm testing and development  | GR      | 2.1.1           |       | 2008                          |
|   | 2.2 assess and apply high, medium and low resolution sensors in order to map and monitor spatiotemporal growth-climate relations including albedo in the forest-tundra border zone   | 2.2.1 collection of historic (AVHRR) low-resolution satellite data, processing to NDVI (if needed; probably use GIMMS) | HT      |                 |       | 1.1.2                         |
|   | 2.2.2 correlation of AVHRR data with tree ring width and height growth data  | HT, AH, IM   |         | 1.1.2           |       | 2008, 2009                    |

|                              |  |   |                    |  |            |             |
|------------------------------|--|---|--------------------|--|------------|-------------|
|                              | 2.3 assess older remote sensed (et al) data in order to reveal changes related to climate change | 2.3.1 search archive for suitable declassified intelligence imagery from 1960s/70s; download, archive and process for treeline location | MZ?                |  |            | 2008        |
|                              |  | 2.3.2 locate old photos if available (Abisko, Khibin, Porsangmoen??)  | MZ?, all to advise |  |            | 2008        |
| 3                            | 3.1 Coordination   |   | AH                 |  |            | neverending |
|                              | 3.2 Education & outreach   | 3.2.1 Develop web site  | AH                 |  |            | 2007        |
|                              |  | 3.2.2 Popular communication   | All                |  |            | continuous  |
|                              |  | 3.2.3 Develop outputs for educational use   | All                |  |            | Early 2008  |
|                              |  | 3.2.4 Data archive  | AH, GR             |  |            | tbd         |
| 3.3 Scientific communication | 3.3.1 Develop publications strategy  | All   |                    |  | Early 2008 |             |

**Presentation 5:** LH. Overview of PPS Arctic Canada, and details about the eastern part. A map of the Canadian field sites is shown below:



The objectives of PPS Arctic Canada are well mapped onto those of PPS Arctic in general. LH emphasised the need to make the project inter- and not just multi-disciplinary. The Canadian funding situation is still unclear but have got at least \$2.5M Canadian (of a requested \$5M). Specific projects are (my summary):

| Location (where specified) | Study                                       | Leader                         |
|----------------------------|---|--------------------------------|
| Labrador (Mealy Mts)       | Climatology                                 | John Jacobs                    |
| Labrador (Red Wine Mts)    | Palaeoclimatology                           | Trevor Bell, Colin Laroque     |
| Labrador                   | Treeline ecology                            | Luise Hermanutz, Paul Marino   |
| Labrador, Churchill        | Spatial configuration                       | Karen Harper                   |
| ---                        | Teaching modules                            | Karen Harper, Terry (?) Wright |
|                            | Soil ecology                                | Gavin Kernaghan                |
|                            | Caribou                                     | Stéphane Boudreau              |
|                            | Tundra and tree islands                     | Serge Payette                  |
| Radisson, Schefferville    | Nutrition, growth dynamics, climate history | Frank Berninger                |
|                            | GIS expert system                           | Alvin Simms                    |

Some of these have obvious potential links to PPS Arctic Norway.

**Presentation 6:** RD. Summary of the projects within the western part of PPS Arctic Canada.

| Location (where specified)  | Study                             | Leader                |
|-----------------------------|-----------------------------------|-----------------------|
| Eagle Plains, Old Crow      | Disturbance, vegetation structure | Jill Johnstone        |
|                             | Tree population dynamics          | Scott Green           |
| Mackenzie Delta region      | White spruce treeline             | Greg Henry            |
| Mackenzie Mts, Churchill    | Environmental monitoring          | Pete Kershaw          |
| 62.09931 N, 137.20435 W (!) | Disturbance                       | Rod Savidge           |
| Kluane NP                   | Env. Manipulation, scaling        | Ryan Danby, David Hik |

Again, some of these have obvious potential links to PPS Arctic Norway.

**Presentation 7:** ND. Environmental, social and cultural change. Land, Livelihood, Food (origins in LUPOG project). Food choice research, environmental change, biodiversity and climate, land use and adaptation. 'Photos through time' project has potential methodological links to PPS Arctic Norway.

**Presentation 8.** DC (and Charles Lafon, Jon Moen). Herbivory effects on Nordic treelines, especially Sweden and especially birch, under influence of climate change. Tree-ring coring and sapling sampling is related to the methodology used in PPS Arctic Norway; some data have been collected from Abisko (which gives a potential synergy with Rik van Bogaert).

QuickTime™ and a  
TIFF (LZW) decompressor  
are needed to see this picture.

**Presentation 9.** RvB. Landscape assessment at Abisko, for treeline study. Recent shifts in treeline. A lot of effort has been spent on acquiring and georeferencing historic data sources, including old photographs (back to 1903), treeline determinations (1905? and 1970s or thereabouts) and a map from 1886.

**Presentation 10.** TV. IASOS-CASEAS. Circumarctic Socioeconomic assessment, sustainability. Influences considered from many sources. Limits to quality of life. CASEAS developed into IASOS (Social observation system)

### **Development of measurement protocols:**

The bulk of the meeting was devoted to a development of measurement protocols. Considerable progress had been made on some, but not all, protocols before the meeting. The measurements were grouped into three broad classes: measurements at the level of individual trees (this was considered to include environmental manipulation experiments), measurements at site level, and socioeconomic and

cultural observations. The distinction that was made in some ITEX protocols between basic ‘level 1’ measurements and more specialised ‘level 2’ measurements was felt to be a useful one, and for the most part the effort of constructing protocols was focussed on level 1, with the assumption being that anyone who needed more specialised measurements would know how to make them without having to consult a protocol.

After detailed discussions over two days, rapporteurs/chairman for the three main groups of protocols (SEC: Nancy Doubleday, individual: Greg Henry, Site: Gareth Rees) described the results. The following table shows how the measurements were grouped, and the status of the protocols after discussion at the meeting.

| <b>Measurement</b>  | <b>Group</b> | <b>Status</b>  | <b>Responsible</b> |
|---|--------------|--|--------------------|
| Spatial configuration of treeline at different scales; transects                          | site         | More or less complete  | GR                 |
| Vegetation structure and composition  | site         | Draft exists, based on CANTTEX. Not discussed at this meeting.       |                    |
| Age structure of trees and shrubs   | site         | More or less complete  | GR                 |
| Plant physiology and phenology  | individual   | Drafted at this meeting.   | OS                 |
| Seeds   | individual   | More or less complete.   | GH                 |
| Soil ecology  | site         | Drafted at this meeting.   | JJ                 |
| Environmental manipulations   | individual   | Being developed and will be circulated among interested participants | GH                 |
| Snow cover and other meteorological data  | site         | More or less complete, based on ITEX.                                | GR                 |
| Animals   | site         | Not done.  |                    |
| Inhabitants’ assessments on limits to quality of life                                     | SEC          | More or less complete  | ND                 |
| Socioeconomic indicators (health, education, demographics...)                             | SEC          | More or less complete  | ND                 |
| Traditional indigenous knowledge (including as a way of sampling environmental variables) | SEC          | More or less complete  | ND                 |
| Site characterisation   | SEC          | More or less complete  | ND                 |



Socioeconomic measurements (reported by ND): Community involvement protocol. Connect to data management. Statements of principles. Replicate (parts of) TV's existing project within IPY? Foci: climate change; health & wellbeing.

After some discussion, it was agreed that making 'level 1' measurements could not be made compulsory for field groups, but such measurements would be encouraged. Level 2 data are more specialised in any case. It is important to recognise the distinction between sites that will be continuously occupied or reoccupied, and those that are visited just once. There is scope for coordination of equipment and of information about who will be working (and doing what) at each site. This needs to be done fairly urgently, since planning for 2007 fieldwork is already happening. The PPS Arctic web site can be used for this.

GR, GH and ND will tidy up the draft protocols developed at the meeting, for circulation to the groups that discussed them during the week after the meeting, to bring them to a complete if perhaps not final form. Then AH/BS will compile the complete protocol document for circulation to the entire PPS Arctic group for approval/additions and indication of what will be measured and where. All of this should happen by 1 May.

#### **Data management issues:**

Presented by GH (based on presentations by E. LeDrew and W. Vincent). Canada is ahead of the game so Canadian standards will probably become international standards. Rules relate to data collected by IPY-funded projects. Basic metadata must be provided promptly. (IPY1 1882 – data nearly all lost. IPY2 1932-33 – similar situation. This IPY must do better!). Metadata ideally in ASCII flat file and transferable among major databases already established. Apart from sensitive data (human subjects, intellectual property, or where data may cause harm), data should be made available fully, freely, openly, and on the shortest feasible timescale (which means months, not years, allowed for quality control and validation). This is not a traditional model for the ownership of scientific data, but it was adopted by ITEX and worked very well despite some reluctance. Data must be acknowledged, preferably as a formal citation. Authors of publications are encouraged to submit bibliographic data through SPRI and the IPY Publications Database Available Online (available at: <http://www.nisc.com/ipy>). There is, however, no funding for data management activities. Issues: equitable access, 'digital divide', IPR, govt/private sector data, role of World Data Centres. Example of use of metadata through GenBank. ArcticNet (Canadian) to be adapted to IPY use? Metadatabase development is high priority for IPY projects. Format is FGDC (Federal Geographic Data Centre – USA). Shows example of ArcticNet data entry form. Operational from 1.4.07 (allegedly).

Also see <http://classic.ipy.org/international/joint-committee/data-management.htm>

**Web site** (BS): information portal for outsiders e.g. journalists. Links to regional programmes, with links to web pages and/or couple of sentences. Photos would be nice. There will be password-protected area for literature, papers, data repository. Ideas: bibliography; bulletin board for news, equipment loan etc. Ideas to BS!

**Logo:** work in progress, but ideas to RD.

**Ways forward (AH):**

- Protocols – next few weeks, finalise by May (at least to level 1).
- Inclusion of projects linked to the network (and anyone else who wants to contribute?) Maybe we should have a sort of ‘outer ring’ of collaborators.
- Missing parts that need focus before next meeting. Outreach, publications, forum to present results/experiences from protocols (will be specific item at next meeting).
- Timing and location of next meeting. According to agreement made in Quebec, should be in North America in Feb-Apr 2008. Newfoundland, probably April. (Easter is March).

***Thanks & Good luck to us all in 2007!***