



20th INTERNATIONAL TUNDRA EXPERIMENT MEETING

Documenting and Understanding Tundra Ecosystem Changes

20th ITEX Meeting, 9-15 September 2019

Location: University of Parma (Italy)

Main scientific themes:

- *Using nearly 30 years of ITEX observations to understand tundra ecosystem;*
- *Plant traits and ecosystem dynamics in tundra ecosystems;*
- *Biotic interactions in a warmer tundra: plants, herbivores, pollinators, mycorrhiza and pests;*
- *Planning the next wave of ITEX synthesis;*
- *ITEX Protocol Development;*
- *New site report or update*

Monday 9th September 2019

Registration followed by cocktail party@ 18:30- 21.30 hrs at the Botanic Garden of the University of Parma, Via Farini, 90 – Parma

Tuesday 10th September 2019

Location: Campus of the University of Parma, Centro S. Elisabetta

8.00 – 9.00 **Late Registration**

9.00 – 9.30 **Welcome**

9.30 – 10.50 **Plenary Session I - Plants Traits and ecosystem dynamics in tundra ecosystems I**

[Chaired by: Jeff Welker and Ellen Dorrepaal]

9.30 – 9.50 **Gaius R. Shaver, and many others:** *Species composition has no effect on overall C-N-P stoichiometry or total biomass in Moist Acidic Tundra*

9.55 – 10.05 **Anne D. Bjorkman, Signe Normand, and many others:** *Impact of experimental warming on population and community plant functional traits*

10.10 – 10.25 **Christian Rixen, Sonja Wipf, Sabine Rumpf, and the IntraTrait consortium:** *Intra-specific trait variation along elevation gradients*



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10.30 – 10.40 **Katlyn R. Betway, Robert D. Hollister**: *Variation in Tundra Plant Traits across a Latitudinal Gradient*

10.40 – 11.10 **Coffee Break**

11.10 – 12.50 **Plenary Session II - Plants Traits and ecosystem dynamics in tundra ecosystems II**
[Chaired by: Elisabeth Cooper and Matteo Petit Bon]

11.10 – 11.25 **Kristel van Zuijlen, Kari Klanderud, Maria Skar Knutsen, Oda Sofie Dahle, Åshild Hasvik, Snorre Sundsbø, Ruben E. Roos, Johan Asplund**: *Warming effects on community-level functional traits of vascular plants, lichens and bryophytes in an alpine ecosystem*

11.30 – 11.45 **Ingibjörg Svala Jónsdóttir, Jonathan Henn, Kari Klanderud, Aud Halbritter, Katrín Björnsdóttir, Brian Maitner, Brian Enquist, Vigdis Vandvik**: *Does intraspecific trait variability contribute to plant community resistance to warming in high Arctic island ecosystems?*

11.50 – 12.05 **Angela Augusti, Olga Gavrickhova, Emanuele Pallozzi, Enrico Brugnoli**: *Carbon fluxes and allocation above- and below-ground in high Arctic tundra*

12.10 – 12.25 **Ned Fetcher, Sofia Iglesia, Stephen Turner, Thomas C. Parker**: *Multiple sources of variation in leaf toughness of plants in northern Alaska*

12.30 – 12.45 **Elise Gallois, Greg Henry**: *Cassiope tetragona as a dendroecological proxy: A retrospective analysis of experimental warming in the Arctic Tundra*

12.50 – 14.20 **Lunch**

14.20 – 15.40 **Plenary Session III - Plants Traits and ecosystem dynamics in tundra ecosystems III**
[Chaired by: Mats Björkman and Siri Lie Olsen]

14.20 – 14.35 **Signe Lett, Anders Michelsen, Ellen Dorrepaal**: *Warming and precipitation effects on species-specific N₂ fixation in mosses in subarctic tundra*



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14.40 – 14.55 **Emily Pickering Pedersen, Joseph Gaudard, Bo Elberling, Anders Michelsen:** *Plant competition for nutrients in a phosphorus-limited tundra ecosystem*

15.00 – 15.15 **Nathalie Isabelle Chardon, Christian Rixen, Sonja Wipf, Daniel Forest Doak:** *Human trampling disturbance effects on *Silene acaulis* in the Colorado alpine*

15.20 – 15.50 **Coffee Break**

15.50 – 16.50 **Plenary Session IV - Planning the next wave of ITEX synthesis I [Chaired by: Sarah Elmendorf and T'ai GW Forte]**

15.50 – 16.10 **Sergio Vargas Z., Sarah Elmendorf, Mariana Orejel, Gesuri Ramirez, Geovany Ramirez, Jeremy May, Steven F. Oberbauer, Robert Hollister, Christine M. Laney, Nathan Healey, Craig E. Tweedie:** *Spatiotemporal Variability of Plant Community Phenology Across Northern Alaska: An Inter-comparison of Remote Sensing Approaches*

16.15 – 16.30 **Ellen Dorrepaal, Gesche Blume-Werry, Sylvain Monteux, Judith Sarneel:** *Plant-soil-microbe responses to experimental climate change*

16.35 – 16.45 **Philipp R. Semenchuk, Holly Abbandonato, Elisabeth J. Cooper:** *Thermal periodicity as a possible mechanism shortening local tundra plant species' active seasons under climate change*

16.50 – 17.00 **New ITEX site session**

16.50 – 17.00 **Chirag Ghirdar:** Preliminary findings from the new ITEX site: An experimental approach to assess the impact of climate warming in the Indian Himalayan Region

17.00 – 18.00 **Poster Presentations**

01 – Investigating the role of large herbivores in the past, present and future of Arctic vegetation dynamics – **Alessandro Mereghetti, Jacquelyn L. Gill**

02 – Understanding Arctic browning from the macro to micro scale – **Aurora Patchett, Mats Björkman, Louise C. Andresen**



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03 – A recommended methodology for dendroecology analysis using common tundra shrub species – **Elise Gallois, Greg Henry**

04 – Epigenetic and genetic responses in tundra plants to 30 years of experimental warming – **Cassandra Elphinstone, Greg Henry, Marco Todesco, Loren Rieseberg, Collectors**

05 – Beyond the tundra: using OTCs in forest ecological experiments – **Esther R. Frei, Luc Schnell, Yann Vitasse, Thomas Wohlgemuth, and Barbara Moser**

06 – Assessing landscape-level vegetation change via remotely-sensed hyperspectral data and traditional ground-based measurements – **Hana Christoffersen, Robert Hollister**

07 – Influence of plant-herbivore interactions and summer warming on short-term tundra plant-community nutrient levels and dynamics – **Matteo Petit Bon**

08 – Functional traits of arctic plants offspring – **Lucie Smržová, Petr Macek**

09 – Ecosystem carbon budgets across a permafrost thaw gradient in Northern Norway – **Casper T. Christiansen, Hanna Lee**



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Wednesday 11st September 2019

Location: Campus of the University of Parma, Centro S. Elisabetta

9.00 -10.40 Plenary Session V - Using nearly 30 years of ITEX observations to understand tundra ecosystem I [Chaired by: Anne Bjorkman and Signe Lett]

9.00 – 9.20 **Rien Aerts, Hans Cornelissen:** *Long-term effects of seasonal warming scenarios on ecosystem functioning in a north Swedish blanket bog*

9.25 – 9.45 **Jeff Welker, Gus Jespersen, Josh Leffler:** *Changes in winter climates of tussock tundra in Arctic Alaska: Long-term ecosystem consequences*

9.50 – 10.05 **Friederike Gehrman, Robert Holden, Ellen Dorrepaal:** *Effect of increased snow depth on plant autumn phenology and physiology in a subarctic mire*

10.10 – 10.25 **Zoe Panchen, Greg Henry:** *High-Arctic phenology shifts under a changing climate: consequences for reproductive success and plant community composition*

10.30 – 10.45 **Nicoletta Cannone, Malfasi Francesco:** *Monitoring long-term vegetation changes (1953-2018) in an alpine tundra ecosystem of the Italian Central Alps*

10.50 – 11.20 **Coffee Break**

11.20 – 12.25 Plenary Session VI - Using nearly 30 years of ITEX observations to understand tundra ecosystem II [Chaired by: Jeremy May and Gergana N. Daskalova]

11.20 – 11.40 **Ruud Scharn, Robert Björk:** *Long term experimental warming mediated draught facilitates shrubification responses: a phylogenetic perspective*

11.45 – 12.00 **T'ai GW Forte, Alessandro Petraglia, Michele Carbognani, Stefano Meroni, Marcello Tomaselli:** *Could climate extreme events elicit unexpected vegetation dynamics in mid-latitude alpine snowbeds?*

12.05 – 12.20 **Francesco Malfasi, Nicoletta Cannone:** *Alpine grassland and snowbed species after five years of manipulation experiments: phenology and growth*



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12.30 – **Social excursion with lunch at Azienda Agricola “La Villa”**

We invite you to join us to visit a Parmigiano-Reggiano Dairy. It is a social and cultural excursion for those who are curious to take a look to the production cycle of a local traditional product famous in the world. We chose a dairy (Azienda Agricola La Villa, Neviano degli Arduini, Parma) following strictly biological agriculture principles and animal wellbeing protocols to show a good example of sustainable agriculture.

Programme of the excursion: we will get to the dairy by bus (about 45 minutes). The bus will be available from 12.30 in three minutes walk from the meeting hall. We will have lunch all together. After the lunch we will be guided around the dairy to explore the production cycle of Parmigiano-Reggiano.

We will be back in Parma at about 19:00.



20th INTERNATIONAL TUNDRA EXPERIMENT MEETING

Thursday 12nd September 2019

Location: Campus of the University of Parma, Centro S. Elisabetta

9.00 -10.50 **Plenary Session VII - Biotic interactions in a warmer tundra: plants, herbivores, pollinators, mycorrhiza and pests [Chaired by: Juha Alatalo and Elise Gallois]**

9.00 – 9.15 **Mats P. Björkman, Mabel Gray, Mario Rudner, Argus Pasqueda, Haldor Lorimer-Olsson, Robert G. Björk, Jeremy May:** *Increased methane consumption following 25 years of warming treatment*

9.20 – 9.35 **Matteo Petit Bon, Hanna Böhner, Kari Anne Bråthen, Virve Tuulia Ravolainen, Ingibjörg Svala Jónsdóttir:** *The biogeochemistry of high-Arctic ecosystems: heterogeneity in response capacity to perturbations and the role of natural inter-annual variability*

9.40 – 9.50 **Ingeborg Klarenberg, Ingibjörg Svala Jónsdóttir, Oddur Vilhelmsson:** *Moss-associated bacterial communities in a warming Arctic*

9.55 – 10.10 **Siri Lie Olsen, Marianne Evju, Jens Åström, Jonas L. Andresen, Jørn Olav Løkken, Sondre Dahle, Nina E. Eide:** *Climate influence on plant-pollinator interactions in the keystone species *Vaccinium myrtillus**

10.15 – 10.25 **Kenna E. Rewcastle, Jeremiah A. Henning, Quentin D. Read, Rebecca Irwin, Nathan J. Sanders, Aimée T. Classen:** *Plant species removal decreases magnitude and variation in nitrogen mineralization in mountains*

10.30 – 10.45 **Tao Li, Jolanta Rieksta, Anders Michelsen, Riikka Rinnan:** *Effects of warming on herbivore-induced plant volatiles in the tundra*

10.50 – 11.20 **Coffee Break**

11.20 – 12.50 **Plenary Session VIII - Planning the next wave of ITEX synthesis II, new protocols and others [Chaired by: Petr Macek and Zoe Panchen]**



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- 11.20 – 11.35 **Jeremy L. May, Steven F. Oberbauer, Robert D. Hollister, Craig E. Tweedie:** *Role of tundra community cover in seasonal albedo values at four sites in northern Alaska*
- 11.40 – 11.50 **Gergana N. Daskalova, Isla H. Myers-Smith, Christian Rixen, Anne D. Bjorkman, Toke T. Høye, Greg Henry, Elise Gallois, Zoe Panchen, Nicoletta Cannone, Rien Aerts, J.H.C. Cornelissen, Petr Macek, Jacob Harris, Kayla Arey and probably others:** *Dark diversity in the tundra: the source of future biodiversity change?*
- 11.55 – 12.15 **Cassandra Elphinstone, Greg Henry, Marco Todesco, Loren Rieseberg, Collectors:** *Biogeography of Arctic White Heather (Cassiope tetragona)*
- 12.20 – 12.25 **Isabel C. Barrio, David S. Hik, Janet Prévèy, Juha Alatalo, Noémie Boulanger-Lapointe, C. Guillermo Bueno, Martin A. Mörsdorf, Isla Myers-Smith, Virve T. Ravolainen, Ingibjörg Svala Jónsdóttir:** *Using a common protocol to measure invertebrate herbivory: consistent responses to warming in alpine and Arctic sites*
- 12.30 – 12.45 **Paulina Wietrzyk-Pełka, Jakub Pełka, Michał Hubert Węgrzyn, Wojciech Szymański:** *Development of vegetation and soil in the glacier forelands in Svalbard*
- 12.50 – 14.00 **Lunch**
- 14.00 – 14.30 **Plenary discussion of the ITEX Special Issue in Arctic Science [Chaired by: Robert Hollister and Kari Klanderud]**
- 14.30 – 16.00 **Parallel workshops to outline joint papers for special issue**
- 16.00 – 16.30 **Coffee Break**
- 16.30 – 17.00 **Plenary discussion of Ongoing and Future syntheses [Chaired by: Robert Hollister and Kari Klanderud]**
- 17.00 – 18.00 **Parallel workshops for planned syntheses**
- 1 Phenology and Phenocams (Sarah Elmendorf and Zoe Panchen)**



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2 NDVI (Jeremy May)

3 Soil Carbon (Jeff Welker and Ellen Dorrepaal)

Other parallel workshops are very welcome!

20.00 – Conference dinner at Trattoria “Corrieri”, Str. Conservatorio, 1, Parma



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Friday 13rd September 2019

Location: Campus of the University of Parma, Centro S. Elisabetta

9.00– 10.00 **Plenary Reports from Parallel workshops [Chaired by: Robert Hollister and Kari Klanderud]**

10.00 – 10.30 **Plenary discussion of potential syntheses and data needs [Chaired by: Robert Hollister and Kari Klanderud]**

10.30 – 11.00 **Parallel workshops of identified needs**

11.00 – 11.30 **Coffee Break**

11.30 – 12.00 **Continue parallel workshops**

12.00 – 12.30 **Plenary Reports from Parallel workshops [Chaired by: Robert Hollister and Kari Klanderud]**

12.30 – 13.00 **ITEX Business**

15.00 tbc – **Post-meeting excursion!!**