

MINUTES

FORHOT – 4th formal project meeting at Reykir, Iceland

21 – 04 - 2015

Attending:

BDS = Bjarni Didrik Sigurdsson (Agric. Univ. Icel. / AUI)

NL = Niki Leblans (UA/AUI)

ESO = Edda Sigurdís Oddsdóttir (Icel. For. Res. / IFR)

SD = Steven Dauwe (UA/AUI)

HMS = Helena Marta Stefánsdóttir (AUI)

ÚÓ = Úlfur Óskarsson (AUI)

Agenda

1. The minutes from 2013 revisited.
2. ForHot project overview 2011-2015
3. The project plans for 2015
4. The Icelandic Research Council application - what to do?
5. Application from Univ. of Barcelona (UAB) to join ForHot
6. Other issues

1. The minutes from 2014 revisited

- It was decided in Leiden that Bjarni would get a key-word protected page on the FORHOT site (www.forhot.is) for FORHOT participants to store and consult data → No funding yet to hire a programmer to make this.
- It was decided in Leiden to add permanent plots at one higher temperature level (+20°C) at FN, GN and Go → Niki did this.
- It was decided in Leiden to add temperature loggers at 20 cm soil depth in all permanent plots and to add loggers to measure air temperature at 10 cm height, sheltered from the sun → Niki did this.
- It was decided in Leiden that Ivika would make a OM fractionation study on soil from FN → This did not happen, instead a fractionation study was initiated in GN by Thomas Kätterer at SLU.
- It was decided in Leiden that Bjarni would try to find better historical data/info about time of warming in GO → This has not happened yet, but Bjarni is working on this.
- It was decided in Leiden that we should again organize such a ForHot workshop → The next workshop is not decided yet, but we would like to have such a workshop in late autumn 2015 or early spring 2016.

2. ForHot project overview 2011-2014

Currently the project consists of 15 different work packages, which are carried out on 4 x 30 permanent plots divided over soil temperature gradients in three different ecosystems:

GN: Grassland warmed since 2008,

GN+N: Nitrogen addition study on grassland warmed since 2008 (and unwarmed)

FN: Forest warmed since 2008 and

GO: Grassland with long-term warming.

The list of participants of the ForHot project during 2012-2015. Researchers active in 2014 are in bold. Students who are still active in 2014 are in bold red; students who have finished are in normal blue font :

<p>Agric. Univ. of Iceland</p> <ul style="list-style-type: none"> • Prof. Bjarni D. Sigurdsson (coord.) • Prof Ólafur Arnalds • Dr. Úlfur Óskarsson • M.Sc. Helena M. Stefansdottir • Elín Guðmundsdóttir (M.Sc. student) • Hanna André (B.S. student from SLU) • Agnes Bondesson (B.S. student from SLU) • Damiano Cilio (B.S. student from Italy). <p>Icelandic Forest Research – Mogilsa</p> <ul style="list-style-type: none"> • Dr. Edda S. Oddsdóttir <p>Univ. Akureyri</p> <ul style="list-style-type: none"> • Dr. Brynhildur Bjarnadóttir <p>Univ.of Iceland</p> <ul style="list-style-type: none"> • Prof. Kesara Anamthawat-Jónsson. • Ella Thoen (B.Sc. student) <p>Univ. of Antwerp - Belgium</p> <ul style="list-style-type: none"> • Prof. Ivan Janssens • Dr. Hans de Boeck • Dr. James T. Weedon (Post-doc) • Niki Leblans (Ph.D. student) • Steven Dauwe (Ph.D. student) • Katherine Vande Velde (M.Sc. student) • Lieven Michielsen (M.Sc. student) <p>Icelandic Inst. Nat. Hist</p> <ul style="list-style-type: none"> • M.Sc. Ásrún Elmarsdóttir <p>Basel University, Switzerland</p> <ul style="list-style-type: none"> • Prof. Kristian Körner • Dr. Armando Lenz (Ph.D. student) <p>Cardinal Stefan Wyszyński Univ., Poland</p> <ul style="list-style-type: none"> • Dr. Krassimira Ilieva-Makulec 	<p>Vrije University, Amsterdam – Leiden Univ., NL</p> <ul style="list-style-type: none"> • Prof. Peter van Bodegom, • Benjamin Hearn (M.Sc. student) <p>Univ. Eastern Finland</p> <ul style="list-style-type: none"> • Dr. Marja Maljanen • Heli Yli-Moijala (M.Sc. student) <p>Lund University</p> <ul style="list-style-type: none"> • Prof. Håkan Wallander • Prof. Erland Bååth • Dr. Zhanfeng Liu (Postdoc) • Dr. Magnus Ellström (Ph.D. student) • Dr. Stephanie Reischke (Ph.D. student) <p>Swedish Univ. Agric. Sci. (SLU)</p> <ul style="list-style-type: none"> • Prof. Thomas Kätterer • Dr. Christopher Poeplau (Postdoc) • Dr. Monika Strömgen <p>METLA, Finland</p> <ul style="list-style-type: none"> • Prof. Leena Finér <p>Univ. of Tartu, Estonia</p> <ul style="list-style-type: none"> • Prof. Ivika Ostonen • Kaarin Parts (Ph.D. student) <p>Copenhagen Univ.</p> <ul style="list-style-type: none"> • Prof. Per Gundersen <p>Aarhus Univ.</p> <ul style="list-style-type: none"> • Prof. Martin Holmstrup <p>Univ. of Vienna, Austria</p> <ul style="list-style-type: none"> • Dr. Anne Daebeleer <p>In total 2012-2015: 25 researchers/postdocs 14 graduate, MS and PhD students</p>
--	---

ForHot's main happenings 2011-2015

- ClimMani conference in Iceland in June 2011 – Bjarni/Edda launch the project idea.
- Autumn 2011
 - Temperature mapping of the recently warmed FN (Bjarni, Edda)
 - Tree growth (Armando & Bjarni)
 - Fine roots/mycorrhiza (Ella, Kesera & Edda)
 - Litter bags (Edda & Helena).
- May-Oct 2012
 - Adding GN: Recently warmed grassland (Bjarni, Úlfur, Elín)
 - N₂O/CH₄ fluxes (Marja)
 - Soil respiration (Bjarni)
 - Soil bacteria and fungi (James, Håkan, Erland)
 - Niki starts her PhD with Ivan/Bjarni
- April-Dec. 2013
 - Adding GO: Grasslands with long-term warming (Niki, Ivan, Bjarni)
 - 75 new permanent plots – 25 in FN, GN and GO (Niki/Elín)
 - Soil nematodes (Krassimira)
 - More N₂O/CH₄ (Marja/Heli)
 - More soil fungi (Håkan/Magnus)
 - Tree root morphology (Ivika /Kaarin)
 - More FN soil gas exchange and growth (Bjarni)
 - Carbon and nutrient stocks, NDVI, plant traits, PRS-probes (Niki/Katherine/Lieven)
- Jan – Des. 2014
 - The ForHot workshop, Leiden, NL, 10-14 Feb.
 - Site manager during Apr-Nov 2014 was Niki Leblans
 - Adding +20 °C plots in GN, FN and GO (Niki)
 - Carbon and nutrient stocks, NDVI, PRS-probes in GN and GO in spring/summer/autumn (Niki)
 - Three 12 m high scaffolding towers built in FN (Bjarni/Edda/Niki et al.)
 - Thesis on phenology, Rs and photosynth. in FN. Hanna and Agnes (SLU)
 - Thesis work on phenology, root resp., TNC in FN. Benjamin Hearn (UV. Univ. Amsterdam)
 - Thesis on growth phenology, litter fall and dendrom. in FN. Damiano Cilio (Univ. Florence)
 - Heli Heli Yli-Moijala (UEF) comes in May and does N₂O/CH₄ campaigns in FN, GN, GO.
 - Håkan collect fungal ingrowth bags at FN, GN and GO and installed new ones.
 - Snorri Þorsteinsson (AUI) does three NEE camp. FN; GN; GO
 - Anne Dalebeler (Univ. Vienna) did 3 transects in GO for NO₃-ox bacteria in August.
 - Steven Dauwe starts his PhD on ForHot. Adding N-addition treatments to GN and control
 - Martin Holmstrup (Aarhus U) sampled soil fauna in FN, GN, GO in Oct.
 - Per Gundersen (KU) installed lysimeters in FN, GN, GO in Sept.
 - First suction of soil water from FN, GN and GO in late Oct (Niki).
 - Soil pH in water and KCl and grain size distribution in all plots of GN, GO and FN (Niki)
 - Potential decomposition rate by TBI method in GN, FN and GO (Bjarni).
 - Christopher Poehlau (SLU) cored GN in Dec. M.Sc. student is doing fractionation
- Jan – Apr. 2015
 - Winter campaign in Feb. on CO₂/N₂O/CH₄ flux (Hans de Boeck (UA) Brynhildur and Bjarni)
 - March 7. Niki Leblans (UA/AUI) came – will be site manager until Nov.
 - April 5. Steven Dauwe came – installed the 30 GN+N plots and fertilized.

- Installed minirhizotrons in GN, GO and GN+N, root-nets, litter-bags (Steven).
- NEE campaign on GN, GO, FN and GN+N (Niki, Bjarni, Steven)
- NDVI and NEE GN and GO in spring/summer/autumn (Niki)

Other recent project news (2014)

- i) Peter van Bodegom has now got a professorship at the Univ. of Leiden, NL.
- ii) Both Katherine Vande Velde and Lieven Michielsen successfully defended their M.Sc. theses from ForHot at UA in 2014. They can be found at www.forhot.is/publications.
- iii) COST ClimMani funded a two week STSM for Hans de Boeck to come and make a winter-flux campaign in the GN plots.
- iv) COST ClimMani also funded a STSM for Krassimira to visit Martin Holmstrup at Aarhus Univ. in Denmark. They plan to write an article on soil fauna in ForHot.
- v) We applied for a H2020 Marie-Curie ITN-ETN project in May 2014. The application came to the second round but did not get funded.
- vi) We applied to the Icelandic Research Council in June, but once more the application got a high ranking but no funding.
- vii) JOURNAL PAPER was published: O’Gorman, E., Benstead, J. P., Cross, W. F., Friberg, N., Hood, J. M., Johnson, P. W., Sigurdsson, B. D., and Woodward, G. (2014) Climate change and geothermal ecosystems: natural laboratories, sentinel systems, and future refugia, *Global Change Biology*, 20, 3291–3299, doi:10.1111/gcb.12602.
- viii) CONFERENCE PAPER was published: Sigurdsson, B. D., Leblans, N., Oddsdottir, E. S., Maljanen, M., and Janssens, I. A. (2014). Effects of geothermal soil warming on soil carbon and nutrient processes in a Sitka spruce plantation, *Working Papers of the Finnish Forest Research Institute*, 316, 11-13.
- ix) CONFERENCE PAPER was published: Elín Guðmundsdóttir, Úlfur Óskrásson, Ásrún Elmarsdóttir (2014). Áhrif af hlýnun jarðvegs á gróðurfar í skóglendi og graslendi á Reykjum, Ölfusi [Effects of soil warming on vascular- and non-vascular plant communities in grasslands and forests at Reykir, Ölfus]. *Rit Mógilsár*, 31/2014, 73-80 (In Icelandic).

3. Project plans for 2015

- **Database.** The database will be updated this autumn (by Bjarni, Steven and Niki) and distributed to all FORHOT participants.
- **Bjarni D. Sigurdsson, Helena Marta Stefansdottir, Brita Berglund - AUI**
 - FN. NEE measurements every 4-6 weeks. Already one made in March.
 - FN. Tree height and diameter before and after growing season (with Helena Marta)
 - FN. Dendrometer survey throughout growing season.
 - FN. Shoot phenology throughout growing season
 - FN. Soil C and N in 4 depth layers in all plots (laboratory analyses by Brita Berglund)
 - FN. Litter sorted from litter traps (Laboratory analyses by Helena Marta Stefansdottir)
 - FN. Root biomass, BD, soil size fractions (Laboratory analyses by Helena Marta)
 - FN;GN;GO;GN+N . Tea bag decomposition Index (with Helena Marta)
- **Brynhildur Bjarnadottir - UA**
 - FN. Gs, A/Ci and Light response curves (1st week of June)

- **Elín Gudmundsdóttir and Úlfur Óskarsson – AUI**
 - GN;FN. Finishing M.Sc. thesis about species composition changes with temperature (deadline: autumn 2015)
- **Edda S. Óddsdóttir - IFR**
 - FN. Starting monthly minirhyzotron surveys in May 2015.
 - FN. Placing root ingrowth bags 4-5 May 2015 - Take up time is still to be decided
 - FN. Placing root nets to make comparison with ingrowth bag technique
- **Sara Maranion - AU**
 - GN;GO;(FN). Laboratory experiment on T acclimation of soil respiration.
- **Niki Leblans - AU**
 - GN;GO. NEE measurements (monthly 2015)
 - GN;GO. NDVI measurements (weekly 2015)
 - GN;GO;FN; GN+N. Lysimeters sampled
- **Steven Dauwe - AU**
 - GN;GO;GN+N. Vascular plant species composition (with help of Ásrún Elmarsdóttir and two master students: Wendelien Meynzer and Stephanie Van Loock). (July/Aug 2015)
 - GN;GO;GN+N. Biomass production. (with help two master students: Wendelien Meynzer and Stephanie Van Loock)
 - GN;GO;GN+N. Litter quality measured (fresh litter)
 - GN;GO;GN+N. Litter bags (decomposition study)
 - GN;GO;GN+N. Root production (Minirhyzotrons & root ingrowth nets)
 - GN;GO;GN+N. Root turnover (Minirhyzotrons)
 - GN;GO;GN+N. Mycorrhiza production (Sand filled ingrowth bags)
 - GN;GO;GN+N. Lysimeters sampled.
 - GN;GO;GN+N. C allocation study (13C labeling experiment) Summer 2015 (GN and GO). Summer 2016 (GN+N)
- **Mireia Bartrons and Josep Peñuelas - UAB**
 - Metabolic state biomarkers, RNA/DNA, ATP/ADP/AMP, NADP/H, NAD/H (July/August)
 - Stable isotopes (complementary to the work of Hakan Wallander and Steven Dauwe)
 - Persistent organic pollutants
 - Metabolomics of leafs and soil (maybe)

It would be appreciated if you could notify Bjarni if there are some additional measurements planned within ForHot in 2015 that are not listed here.

4. Icel. Res. Council application- what to do?

History: 2 x applied, 2 x very good grades, 2 x no funding (probably stopped both times by the same external reviewer). We asked for 1 PhD (soil biology/root biology), one M.Sc. student (site manager) and funding for a workshop.

Main criticism: PhD student: Looking at root dynamics when warming comes from below

Two options:

Leave this part out

Put more emphasis on this part and explain it (even) better

Bjarni asked if anybody was interested to lead the application. None of those present wanted that.

Options:

- i. New large application (but adapted, since large parts of the older application are now taken over by Steven Dauwe's PhD)
 - ii. Split the application up in 2 smaller applications (More focused on forest / support for Steven Dauwe ???)
 - iii. As the budget for financing PhD students will probably be increased, it would be a good idea to apply for a PhD position.
- Deadline to send in applications is not known yet (will probably be late June).
Bjarni will take the lead when the new deadline and guidelines will be published.

5. Application from Univ. of Barcelona (UAB) to join ForHot

Application from Univ. of Barcelona (UAB) to join ForHot (in cooperation with Ivan/Antwerp) was accepted.

6. Other Issues

• FORHOT database

- The FORHOT database currently includes all data of 2011-2013. ☐ The database will be updated with data of 2014-2015 in the autumn of 2015 by Bjarni, Niki and Steven

• The Biology conference in Iceland 5-7 November 2015

- This is a large conference (150-250 participants) on Icelandic biological and ecosystem research
- There will be a separate session about geothermal ecosystems – ForHot participants are especially invited.
- The scope of the “Geothermal ecosystem” session will be broad (terrestrial ecosystems, stream ecosystems, nature conservation, tourism, ...)

• COST ClimMani conference

- The next COST ClimMani conference will take place in Poznan, Poland, during Sept 29 – Oct 2. Ivan, Bjarni, Niki and Steven all plan to attend this meeting and have a PhD committee meeting there. There will also be a number of other ForHot participants coming to this meeting.

• Next FORHOT workshop

- Last workshop was in Leiden, February 2014
- Next workshop will be in winter/spring 2016