RECIPE CHARQUEMONT MEETING

Breakout in 4 groups (aim: decision making on sampling, protocols and hypotheses)

Report Gas measurements at surface, incubation (CO_2, CH_4), assessment of plant growth /development, biodiversity

1. How to do CH4 measurements, technics

- CH4 measurements in the same 30 cm diam. collar as CO2, and at the same time (more reliable).
- Build a dark chamber with a fen and an insulating coat with a reflecting surface.
- Start measures after 10', about 5-10 samples with syringe, every 5' (do tests).
- Size/height of chamber is not so important.
- Practically, best start CO2 measurements on one collar and alternatively take gas samples in some other installed CH4 chambers.
- Use Teruno container for sampling CH4 (see Mika).

2. What about the two types of IRGA chambers (open top and closed chamber)

- A paper on chamber comparisons was issued (see Mika).
- Collar of 30 cm diameter for every body. In Finland, larger collar are already used, but new sites will get the 30 cm collar.
- Calibration could be made with a special device in Finland, but the idea of bringing the various chambers to the Tampere meeting is abandoned. Instead, Estelle will do some measurements with both devices in Baupt.

3. Frequency of gas measurements

- For doing the carbon balance (modelling with explanatory variables), weakly measurements are necessary, as well as full day measures from sun rise to sun set. This precise calibration will be done in Russey and Finland.
- In Scotland, Baupt and Chaux-d'Abel, we will apply/validate the models and thus do only monthly measurements. If necessary, the models could be adapted towards a simplification, in order to fulfil the required comparisons between sites.
- It is mentioned that having a model based on precise and intensive variable measurements such as temperature, light and humidity doesn't compensate for the missing of other relevant variables (i.e. carbon losses in runoffs and CO fluxes).
- It is also mentioned that models have often to be worked out for each collar. Nevertheless, in our project we have to chose strategic models that can be applied in all situations

4. Abiotic parameters

- T air at 1.5 m.
- Solar radiation at 1.5 m. in open place.
- P from nearest weather station or else at 1.5 m.
- T sol at -1, -5 and -30 cm depth.
- The depth –5 cm will constitute the common depth for modelling.
- The depth –1 cm is risky (fluctuation).
- The depth – 30 cm is important for incubation.
- Measures every 30'.
- Dipwell ("piezometer") measures for each collar, possibly weakly, otherwise bi-weakly.
- Humidity from Sphagum fallax dessication index provided next by Estelle.
- Ordering material: i-buttom.com (see Mika) or littoclime.com (see Estelle).

pluviomètre	Rèf 7852	150,51 euros
Enregistreur d'évènements	Hobo event rèf H07-002-04	208,38 euros
Enregistreur de température surface et prof étanche	Rèf H08-031-02	402,24 euros
Enregistreur de température non étanche à protéger avant de poser (mis à 5 et 30cm dans la tourbe)	Rèf H08-001-02	145,63 euros
Enregistreur d'intensité lumineuse	Hobo LI 2K rèf HLI	389,72 euros
Boitier de protection transparent et étanche	Rèf subcase cl	58,37 euros
Abri de température anti radiations	Rèf 7714	136,44 euros
Logiciel Boxcar pro et cordon de liaison	Rèf BPK-3.6	139,73 euros

5. Plant biometry

- Estimates of LAI for vascular graminoids: made calibration curve length vs area and length vs weight (scan leaves and count pixels, calibrate with known surface). In the collar, count number of leaves (exhaustive sampling, or else, 3 replicated small samples) and measure their length.
- Estimates of LAI for vascular plants with low statured leaves: made calibration curve estimated size class vs area and size vs weight (scan leaves and count pixels, calibrate with known surface). In the collar, count number of leaves in each size class.
- Sphagnum and other mosses: measure of coverage within collar and density measurement (3 replicates).
- In Finland the length is measured for 3 shoots, always the same, bi-weakly, the number of leaves is measured monthly.
- Estelle provides a precise protocole for mosses.

6. Primary productivity

- Necessary for comparisons with modelled carbon fluxes

- Conversion from mass weight to carbon weight will be done based on figures in literature
- Some measures concerning biometry can be used again.
- Mika provides the protocole for vascular plants and mosses.

7. Selection of patches, upscaling

- It is more important to dowscale to plant level (aim of the experiment) rather than upscaling to larger extent (landscape level). Such a trial is done in Finland in another study.
- In Scotland, the patches are considered separately (random sampling within each patch), in Finland the collar are rather in mixed situations, in Russey both, mixted and patchy situation, in Chaux-d'Abel, both could be done, but no decision has yet been taken.

8. Vegetation relevés and diversity

- Mika has a paper on how to make the vegetation relevés in a patchy environement and assess diversity on permanent plots (by Eeva Stina Tuttila).
- Mika provides a protocole.

9. Not discussed

- Incubation (CO_2, CH_4), André-Jean should provide the protocole.
- Gas measurements in WP II
- 13C/12C surface fluxes, Daniel Epron, Philippe Steinmann and André-Jean Francez should work out the protocol.