 **Minutes of the workshop #1:**

**“Greenhouse gas measuring methods, monitoring and modelling”**

**June 12th 2019**

**Chairman**: S. Gogo (UO), L. André (BRGM), F. Laggoun (CNRS)

Two rounds of workshops were organized to discuss about the GHG measuring methods, monitoring and modelling. 20 people attended the first round and 9 people the second round. We decided to divide the audience in sub-groups of 5 people max. Then, we proposed them to participate to a “role-playing” game. They are in charge of the management of a degraded peatland site and they have to implement a C storing strategy (for example: addition of Sphagnum species). The main question was: “What do you do to assess the success of your strategy?” They had 10 minutes to discuss and exchange within each group, then they explained the results of their thoughts to all the audience. All sub-groups proposed nice and relevant feedbacks and the main outputs are listed hereafter:

* ***Baseline assessment***: all groups agreed on the importance to have sufficient time to obtain a relevant baseline. But, what is the appropriate timescale? 1 year seems to be a minimum duration to obtain some representativity of the site. This baseline must consider plants (plant inventory, sphagnum and other plants coverage, vegetation mapping, biodiversity…), hydrology of the site (water table depth, water map, peat depth, soil and water chemistry…) and carbon fluxes. This baseline shall include the existing management of the site, the history of the site (disturbances, impacting activities…), and the situation of surroundings (agriculture…);
* ***Monitoring actions***: before monitoring, some questions must be asked: replications of the measurements according to the variability of the site (topography, ecology)? The scale (extension of the monitoring in space) and the timescale (duration of the monitoring: 3 years seems to be too short to have a good representativity of the site)? Experimental design? Constraints with respect to the monitoring: financial and/or legislative (planning permissions). Necessity also to have control sites in order to measure benefits of the restoration works. Need to have a complete C budget, including both stocks and fluxes. For stocks, it needs low- frequency measurements on the vegetation and soil. For fluxes, high frequency measurements are needed to estimate CO2 and CH4 fluxes (from peat to atmosphere) but also DOC (Dissolved Organic Carbon) and POC (Particulate Organic Carbon) in water. It is also underlined the necessity to have an estimation of the NPP (Net Primary Production) with respect to the GPP (Gross Primary Production).
* ***Assessment and interpretation:*** use of GEST model and LIDAR mass balance assessment. It is important to determine to who this is reported to. What are the success factors? Development of a peatland code in order to quantify and/or monetize the results?

After this restitution of all sub-groups, Sébastien and Laurent presented the plan of the program of the CARE-PEAT Project, both on monitoring and modelling. The planed work is in coherence with all the thoughts of the audience. The two workshop rounds concluded by a discussion between all the participants.