ISSI team Management impact and carbon cycle:

Assess the available regional and global information on current and historical land management (both EO and census data) and determine to which extent this information can be harmonized, specifically using remotely sensed EO data

Day 1 Monday 17-2-2014

09.30	Opening and practical arrangements (Han Dolman)
10.00	Short round of introductions and past relevant work (all, each max 10 min)
11.30	Karl Heinz Erb: Summary of Terrabites workshops and implications for the ISSI team,
12.00	Julia Pongratz Report on the status of land management in ESMs and the required variables
13.30	Discussion on exact program related to objectives of meeting Definition of example dat sets to work on in relation to Terrabites assessment The workshop will serve to identify 2-3 interesting and doable such projects and connect the relevant ESM and EO people
15.00	Sebastiaan Luyssaert (lead) Introduction forest management case study
18.00	close of the day

Day 2 Tuesday 18-2-2014

09.00- 12.30	Continuation review Forest management case study
13.30-18.00	Introduction and start modeling requirements (Julia Pongratz lead)

Day 3 Wednesday 19-2-2014

09.00-12.30	Continuation modeling requirements
13.30-16.00	Wrap up, assignments, future work

Potential datasets to choose from and start working on:

(1) **Forest management maps for Europe:** work in progress in Sebastiaan's group. Use this also to think about if we can define a few general approaches, also applicable to other variables, on scaling back in time available EO data (Julia's group has worked on hindcasting land cover data).

(2) **Forest management and forest age maps globally.** Good forest age maps exist for Europe, North America and selected other countries, but no harmonization to global coverage has been tried.

(3) **Allocation rules / creating land *cover* data for ESMs:** if we use maps of cropland and pasture, which type of natural vegetation (e.g. from a potential vegetation map, of dynamically simulated by the DGVM) do we change by how much to accommodate the agricultural areas? If we assume natural grassland is used for pastures preferentially instead of clearing forest we found that forest cover changes since 1850 have been 6 million km2 less than if we scale down all natural vegetation types proportionally. I would like to explore if allocation rules can't simply be derived from the high-resolution (relative to ESM resolution) remote sensing data.

(4) New datasets such as Hurtt's account for shifting cultivation, capturing **"gross transitions"** in addition to "net transitions", i.e. sub-grid scale land use transformations. 3 or 4 of the CMIP5 models accounted for this. However, Hurtt's assumptions due to lack of statistical data are extremely coarse. This may be a more tricky topic given the fine scale of gross transitions, but nevertheless there should be some indicators in EO data that could shed light on this.

(5) **Grazing datasets:** The ESM category "pasture", is often represented by the same parameters and processes as some natural grassland type. This ignores issues such as * grazing can be on any type of vegetation, not necessarily grassland * intensity hugely differs, with large effects on biomass stocks and fate/turnover rates of carbon. Such datasets are relevant for ESMs and are discussed as additional layers to be passed on from IAMs in the future, but have many interesting applications in the socioeconomic realm.

(6) **Bioenergy:** This is another emerging topic for many DGVMs, requiring maps of * extent of bioenergy as opposed to conventional agriculture * productivity estimates (for model evaluation) * phenological observations * knowledge on fate of biomass and products (the latter relates also to forest management).