Paracou data - Some additional info

September 28, 2016

1 Primary data

Tree identity

- `n_parcelle`: plots 1 to 15, 6.25 ha each;
  - control plots : 1, 6, 11, 13, 14, 15;
  - logged plots: 2, 3, 4, 5, 7, 8, 9, 10, 12.
- `n_carre` (from 1 to 4, 1.56 ha each);
- `n_arbre`: number on the tree tag;
- `i_arbre`: unique id for every tree.

Coordinates

- `Xutm`;
- `Yutm`;
- `UTMZone`.

Botanical identification

- `nomPilote`: vernacular/common name;
- `Famille`: family;
- `Genre`: genus;
- `espece`: species;
- `SourceBota`: vernacular name ("Vern"), or true botanical identification;
- `indSurete`: confidence in botanical identification, from -1 to 4:
  - -1: only vernacular name (SourceBota="Vern"),
  - 0: undefined family,
  - 1: undefined genus,
  - 2: undefined species,
  - 3: could be one of 2 (very similar) species in the same genus,
  - 4: good confidence in the species identification.
- `signification`: meaning of `indSurete`, in French.

Census data

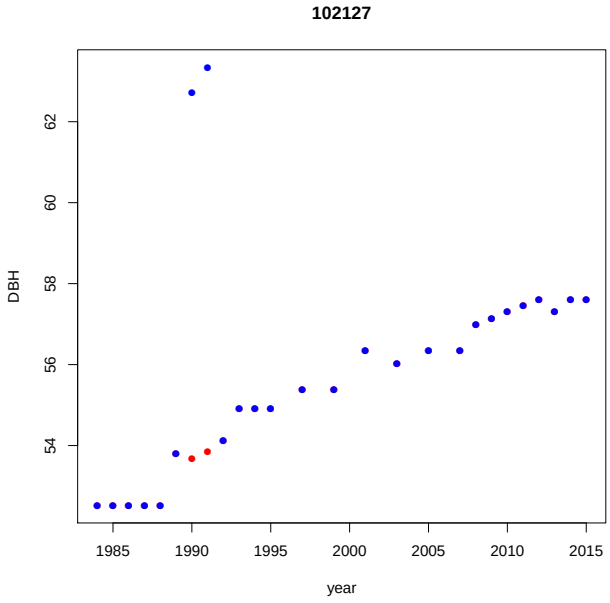
- `campagne`: census year;
- `circonf`: circumference (cm);
- `code_vivant`: "VRAI" for live trees, "FAUX" for dead trees;
- `code_mesure`:
  - for live trees:
    - 0: directly measured at BH,
    - 1 to 3: measurement height is 0.5, 1.0 and 1.5 m higher resp.,
    - 4: estimated circumference;
    - 7: tree injured during logging operations,
    - 9: devitalized tree,
    - 10: use of a ladder,
    - 11: naturally injured,
    - 12: fallen tree but still alive (real survivor);
  - for dead trees:
    - 0: dead standing tree,
    - 1: dead standing tree (injured by logging),
    - 4: harvested tree,
    - 5: tree destroyed during logging operations
    - 6: dead fallen tree,
    - 7: tree killed by another fallen tree,
    - 9: devitalized tree.

2 DBH correction

2.1 DBH increment > 5 cm yr^{-1}

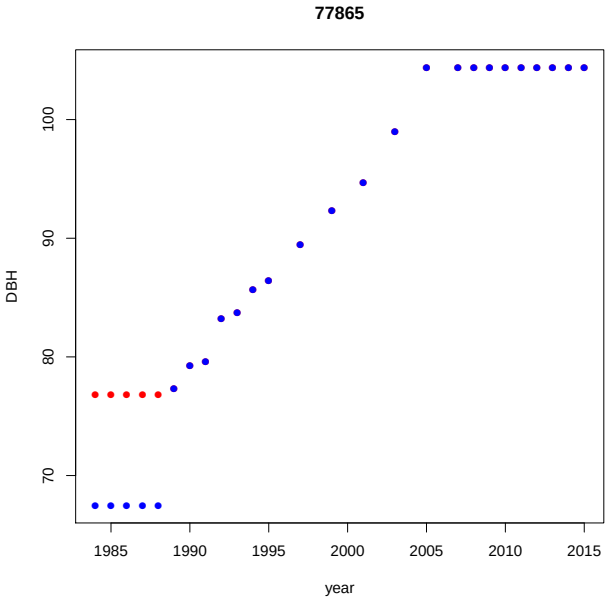
2.1.1 Followed by a return to "normal" values

Irregular DBH values are deleted, and replaced using a linear regression (corrected DBH: red dots).



2.1.2 No return to "normal" values

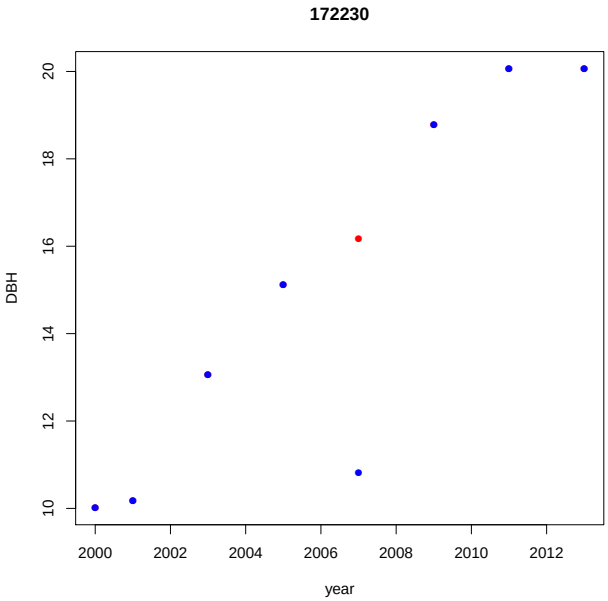
We split the data into 2 sets of values: 1 before and 1 after the excessive increase in DBH. If there is a set of values with more `code_mesure` = 0 (the tree circumference was really measured), we have more confidence in this set of DBH and change the other one. Else, we choose to trust the more recent set of DBH and change the 1st one. The difference in DBH is added to the set of DBH we want to change, plus the expected growth between the 2 measurements (calculated as the mean growth of the 2 previous and the 2 next measurements).



2.2 DBH decrease $>$ 2 cm yr^{-1}

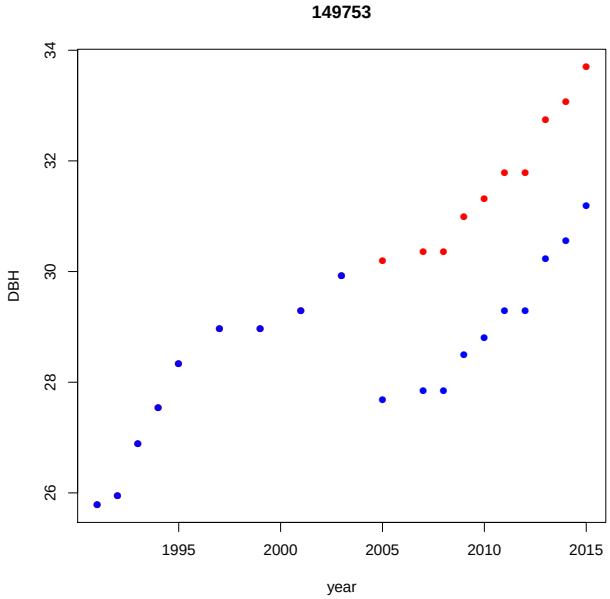
2.2.1 Only one irregular value, and then a return to "normal" values

The irregular DBH value is deleted and replaced using a linear regression.



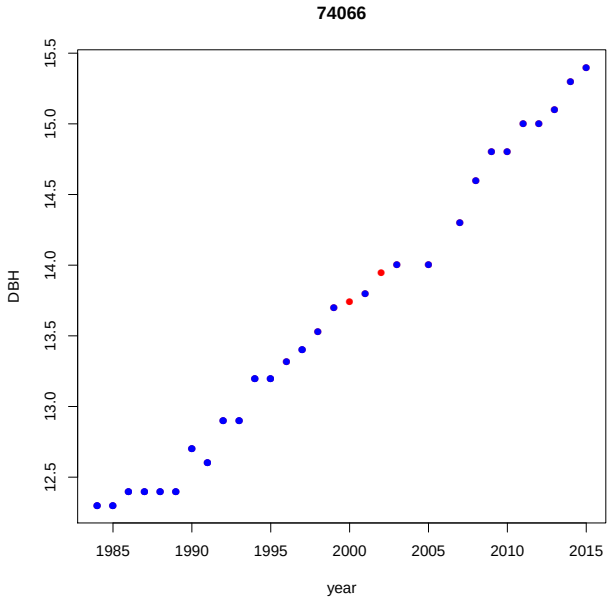
2.2.2 DBH decrease with no return to "normal" values

If there is a set of values with more `code_mesure` = 0 (the tree circumference was really measured), we have more confidence in this set of DBH and change the other one. Else, we choose to trust the first set of DBH and change the last one (generally, DBH decrease is due to the appearance of buttresses requiring a change in measurement height and the use of a ladder). The difference in DBH is added to the set of DBH we want to change, plus the expected growth between the 2 measurements (calculated as the mean growth of the 2 previous and the 2 next measurements).



2.3 Missing data

Missing measurements are replaced using a linear regression.



New columns in Paracou file

- `dbh` $= \frac{circonf}{\pi}$ (cm);
- `dbh_c`: corrected DBH (cm);
- `status`: 1 for live trees, 0 for dead trees.