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EF – Scale enlargement for wooden plants

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Buildings (towns) cover a much smaller area than trees (forests). As there are great areas without buildings, often a severe local storm doesn′t affect any building. In these cases assessing the strength of a storm is possible only by including damage due to vegetation. Even in big cities and towns vegetation is widespread and gives additional possibilities of ranking the strength of storms. In worldwide comparison the strength of vegetation is better comparible than that of buildings.
On the basis of worldwide comparable strength (stability) of woody plants by great variation within the same species they will be fundamental suitable to make distinctions about storm-intensities.

In the EF-Scale only two DI′s are eliminated up to trees until now. These are DI 27 for hardwood and 28 for softwood. This illustrates the complexity given by the nature only very insufficienty. An approximate capture of the variation is possible only by a lot of higher number of DI‘s.
This should consider the presentation introduced for the ECSS 2015.
In this presentation similar tree species are grouped into species groups for a tree species, or genera with similar strength properties based on forest inventories.

For every type of tree group – this are 10, an independent DI is suggested. The tree groups are: Oak (1), Beech (2), Other Hardwood such as Ash, Maple, Elm, etc. (3), Soft Hardwood such as Poplar, Willow (4), Spruce (5), Pine (6), Fir (7), Larch and Douglas (8), Shrubs (9) and Palms (10).

For the consideration of the environmental conditions, every type of tree group often cause a bigger scale of variation within the same kind than between different kinds. So it is suggested dividing every type of tree group into other 4 – 6 DI′s. These are for example:
1. Fragile soil (Gley or Pseudogley, by a long rainy periods wet soil or Moore), standing too close, labile forest stands,
2. Rather solid ground, standing too close to stock or rather labile soil, but stable stand structure (favorable height-diameter relations),
3. "Average" ground "average stock",
4. Firm, rocky ground, stable forest stands (for example on mountain crests or hilltops),
5. Forest outside edge Situation,
6. Solitaire trees,
About 50 DI′s are the result which take into account the complexity with the variation width between different types of tree and different environmental conditions.

To the differentiation of storm intensities will award according to DI between 5 and 10 DOD’s.
The allocation of the DOD’s to single TU ‘see are based on:
• Empirical investigations in different tree stands and at different trees on different locations,
compared with wind speed datas,
• Several case studies and damage surveys from literature,
• Numerical simulation on typical single trees,
• Non destruction investigations of the strength of individual trees.

View:
Due to the complexity of the presented presentation it can be seen as a design shall be calibrated in practice on. In this way, in a few years an internationally comparable instrument for storm intensity estimation based on tree damage is reachable.