

BIOFORCLIM - biomorphodynamics of forested hillslopes driven by forest ecosystem disturbances due to hurricane wind events and their relation to changing climate conditions

Damages caused by hurricane wind in old-growth and managed forests may have their geomorphic consequences. It is mainly due to windthrows when trees are uprooted and some part of soil material attached to root systems is relocated. This factor in many geomorphic and soil studies was neglected and in consequence, for many protected forest ecosystems, the process of windthrows occurrence stayed significantly understudied. It applies to the current activity of the process and its long-term dynamics during the past several hundred years.

One of the natural archives that record the scope of wind damages in forests is tree-rings. A significant increase of the tree-rings width during the subsequent 5-10 years can be interpreted as an increase in solar radiation availability for trees growing under a closed forest canopy. Such a situation may occur when a gap in the forest canopy is formed by a fallen tree (uprooted or broken). One of the aims of the present project is quantification and characteristic of the contemporaneous wind regime of national parks selected for this study but also a description of the intensity and effectiveness of soil material biotransport induced by the tree uprooting process. The database created during the project realization will allow indicating which are primary factors influencing the range of this kind of biotransport. This information will be used to biotransport modeling modified by forest stand features, topography and wind regime of the sites.