Project Database of ICP Forests

PROJECT DESCRIPTION

PROJECT INFORMATION

Project title:	**Artificial Intelligence for Carbon fertilisation effect - Generating global maps for nutrients foliar concentration**
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The availability of nutrients such as Nitrogen, Potassium, Sulphur, Magnesium, Calcium, and Phosphorus are key for the functioning of terrestrial ecosystems and their response to current global changes. Furthermore, with photosynthesis, an important part of the ecosystem's carbon cycling is happening at the leaf level, and coincidently, leaves exhibit amongst the highest nutrient concentrations in plant tissues. Hence, constraining foliar nutrient concentrations is crucial in understanding potential shifts in plant communities and Carbon cycling.

Consistent information on the current nutrients composition of vegetation such as Sulphur (S), Magnesium (Mg), Calcium (Ca) at a European scale and the variables that determine it is lacking. To fill this gap, firstly, georeferenced records are gathered of tree foliar concentrations of S, Mg, and Ca along with Climatic and soil data from ICP Forests databases, in collaboration with CREAF, Barcelona, one of the consortiums of Future Arctic to extract more field data. Therefore, my research aims to predict European maps of foliar S, Mg, and Ca concentrations for woody plants using neural networks at a resolution of 1 km^2. We would be using data for climate, atmospheric deposition, soil, and morphoclimatic groups to train the neural networks.