Estimating Water Uptaking Depth of *Chamaecyparis obtusa* and *Styrax obassia* by Stable Isotope Analysis

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**Introduction**

- Previous survey for 15 years figured out that broadleaved tree species is becoming more dominant than conifers in Mt. Baegun.
- We started this study to investigate whether the conifers was defeated by broadleaved species in water competition as one of the possible reasons for this change.
- Stable isotope analysis (δ^18O and δ^13C) is a credible method that has been globally used to investigate the plant water use scheme (X. Leng et al. 2013, B. Yang et al. 2015).
- Seasonality in water using depth of tree species informs how competition on water goes on and whether the species uses the shifting as a strategy for the water stress (H. Wu et al. 2016).
- This study aims to find out the contribution of each 5 soil depth to the water use of the 2 neighboring tree species.

**Materials and Methods**

We selected 6 study plots which were surveyed before. And 5 pits are selected randomly to install tension lysimeter at 5 soil depths (10, 30, 50, 100 and 120 cm) We sampled soil water and branches at near 10 m height from Apr. 2016 to Nov. 2016 with about 2-month interval. Mild vacuum condition (-0.5 to -0.8 bar) was imposed to extract soil water.

**Results**

**Isotopic Composition of Soil Water**

- The isotope value of soil water was increased from 10 cm to 30 cm, and then decreased gradually until 120 cm.
- The decreasing pattern is considered reasonable because the fractionation is frequent during evaporation.

**Conclusion**

- *Chamaecyparis obtusa* and *Styrax obassia* have a different water source even though they are neighboring.
- This may imply that these 2 species have different hydrological niche and can co-exsist despite the demand of more data for confidence.

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