Vegetation Ecology Lab
植群生態研究室

Research interests:

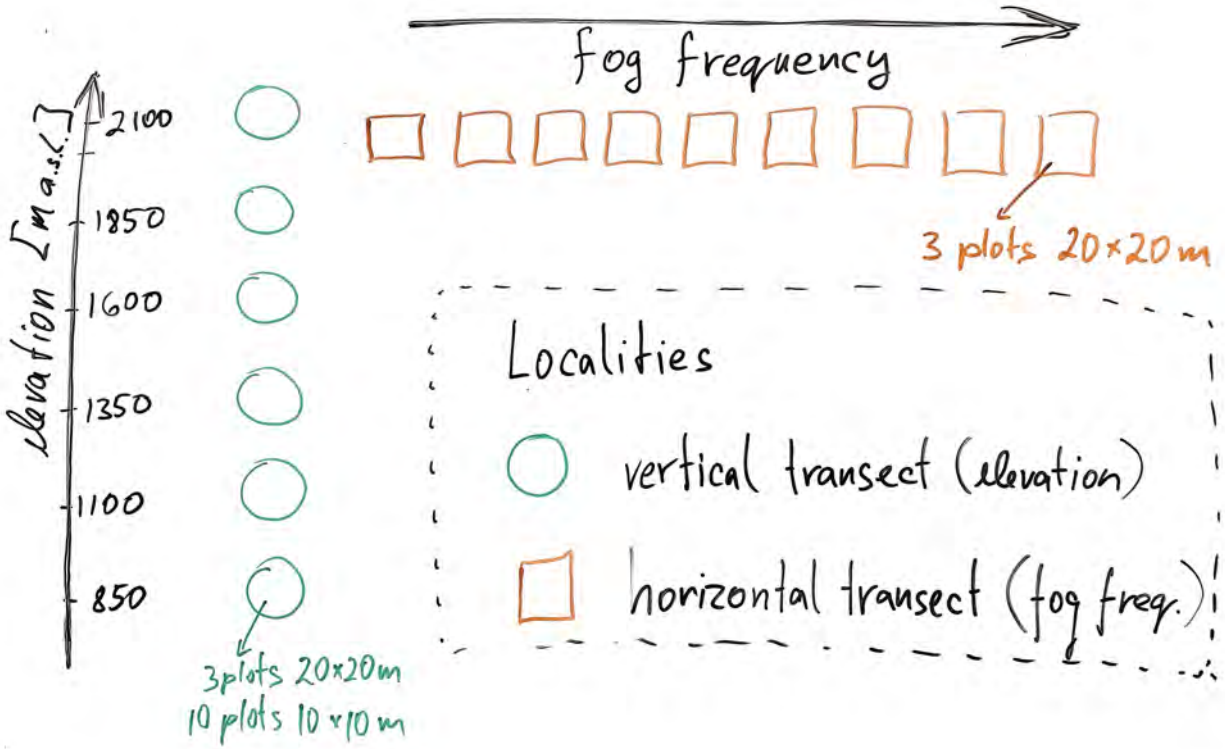
- Plant functional traits
- Diversity patterns
- Forest dynamics plots
- Numerical ecology
- Species indicator values
- Effect of fog & wind on vegetation

PI: David Zelený (澤大衛)

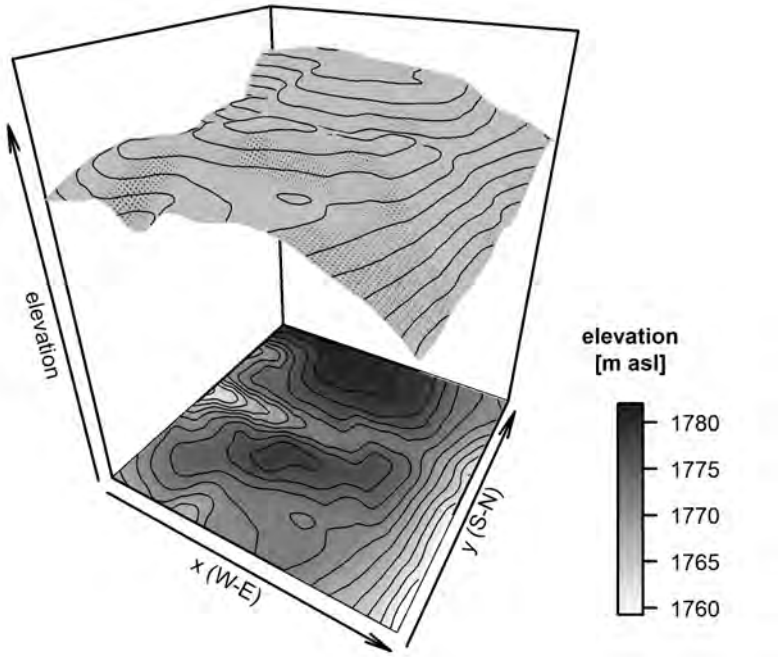
Institute of Ecology and Evolutionary Biology
National Taiwan University, Taipei, Taiwan

Forest close to Yuan-Yang lake, 鴛鴦湖 (fisheye picture of the canopy during fog event, 2013)

Vertical and horizontal transects



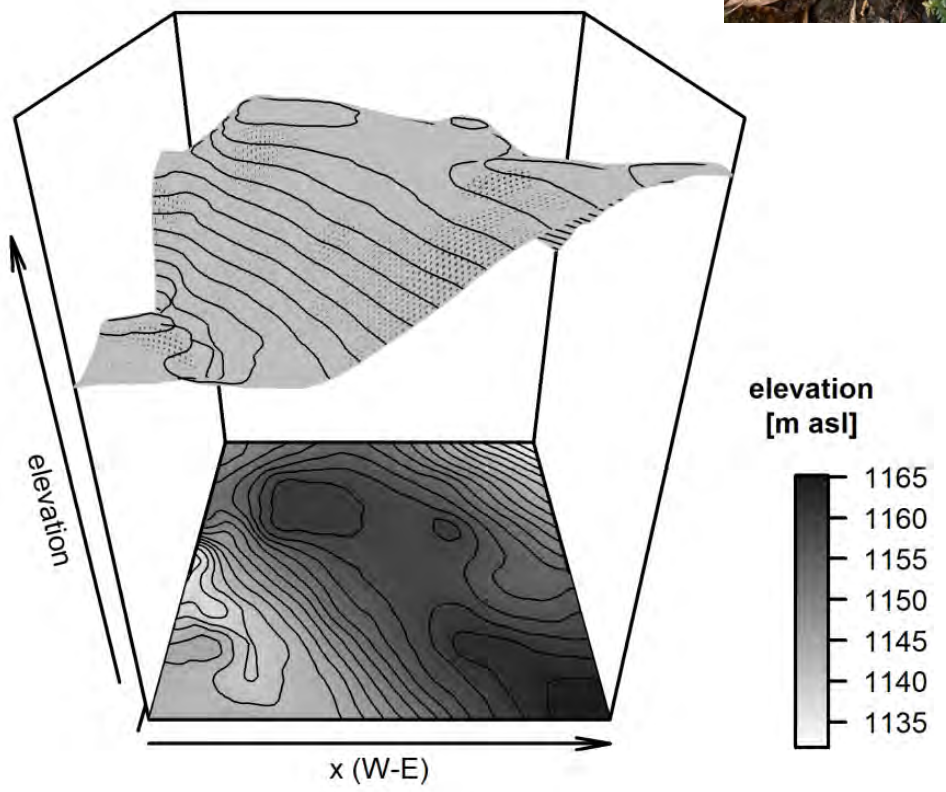
Lalashan Forest Dynamics Plot (1 ha, 1750 m asl)



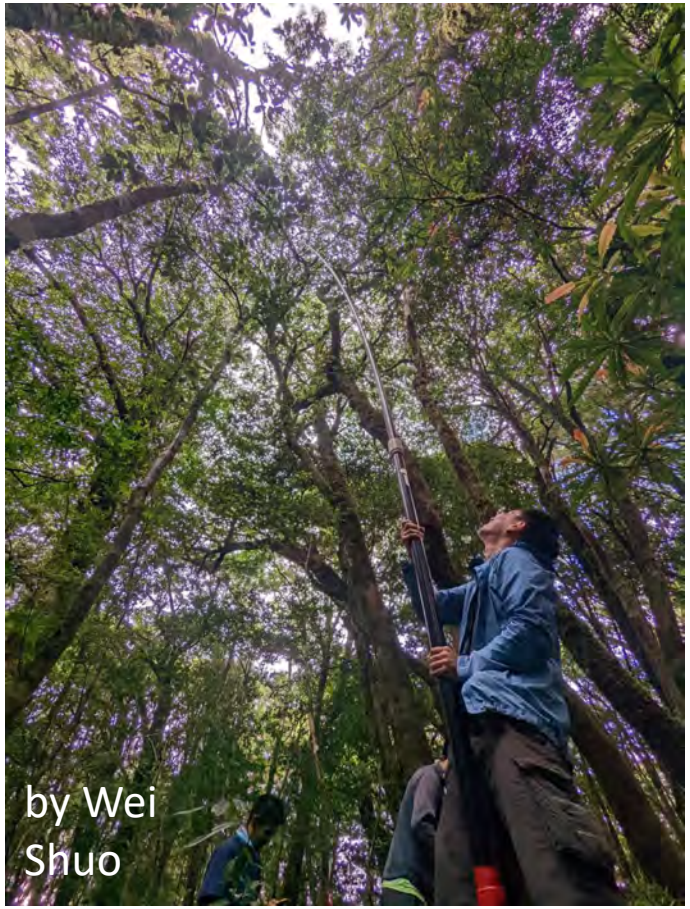
Chen T., Lee Y.-N., Lin P.-Y., Wu K.-S. & Zelený D.* (2024): Vegetation of *Chamaecyparis* montane cloud forest in Lalashan Forest Dynamics Plot. *Taiwania*, 69:399-411 https://doi.org/10.6165/tai.2024.69.399

Lopeishan Forest Dynamics Plot

(1 ha, 1150 m asl) - resurvey after 30 years

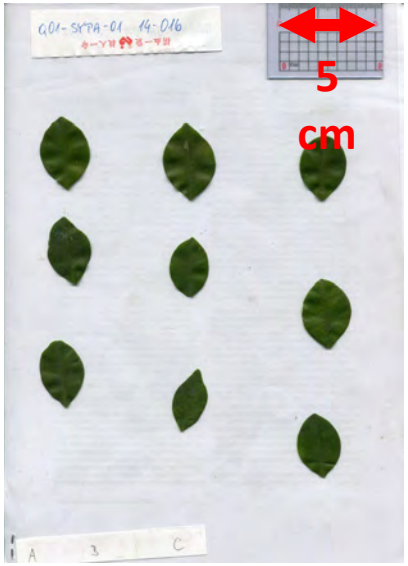


Measuring leaf traits (for woody and fern species)



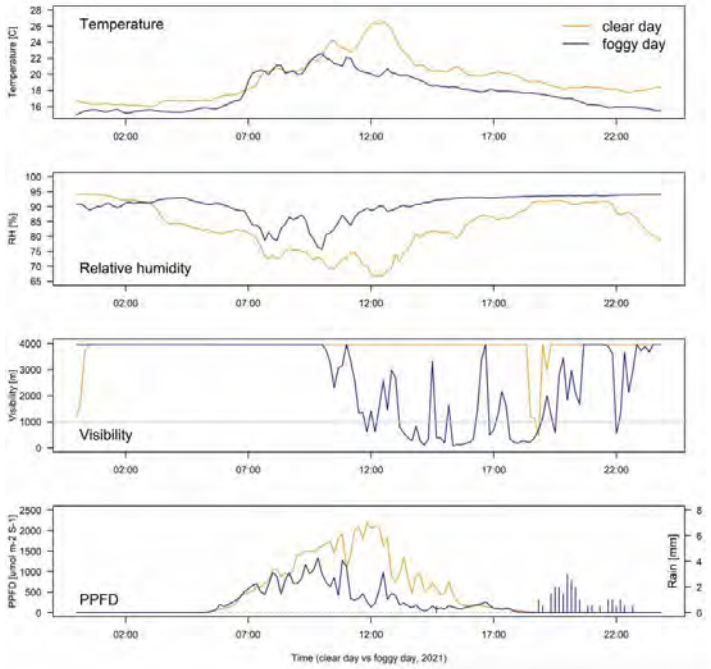
Shi-I Lin
林書逸

Jéssica
Lira Viana



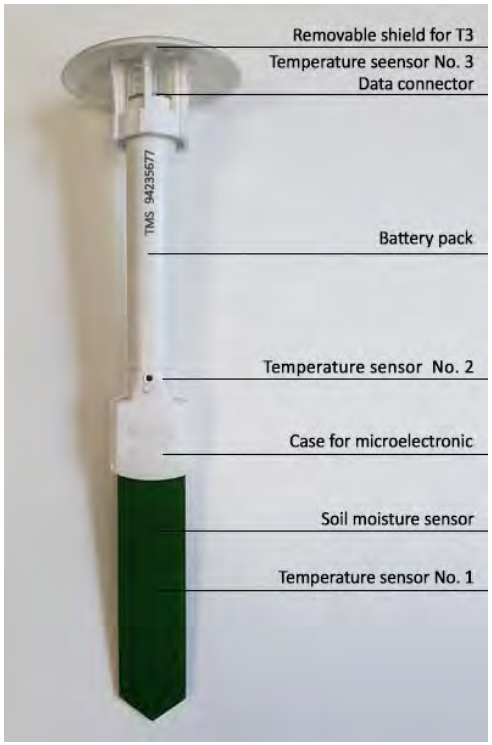
Lin S.-I. & Zelený D.* (2024): Relationship of woody broad-leaved species functional trait to fog frequency and related factors in subtropical montane cloud forest in Taiwan. Preprint on Authorea. https://doi.org/10.22541/au.172563138.89725280/v1

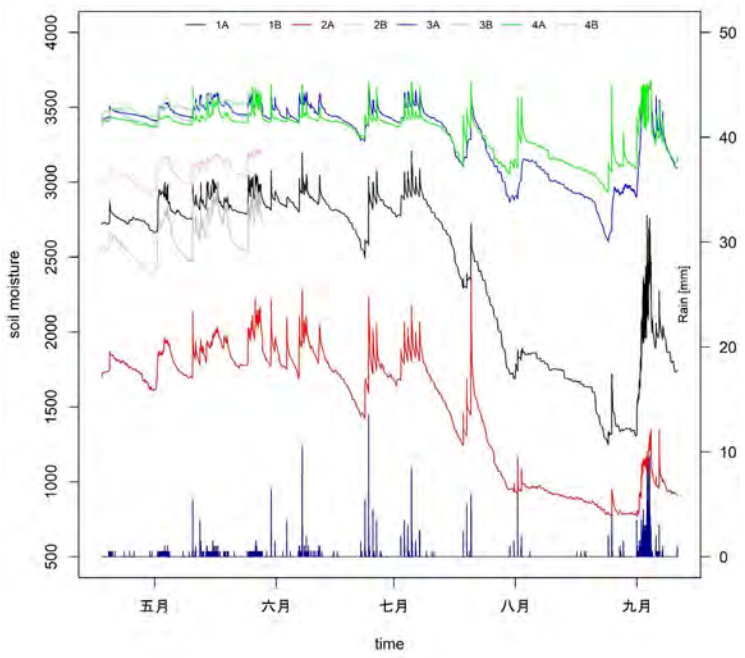
“Renewed” weather station in the Lalashan saddle



- visibility logger
- precipitation gauge
- temperature, relative humidity
- wind speed and direction
- PAR and UV-B light sensors

Soil moisture and temperature logger (TOMST)





Plant root growth simulator (PRS)
to measure available soil nutrients

Anion PRS Probe

adsorbs:
NO_3^-, $H_2PO_4^-$, SO_4^{2-}, micros, etc.

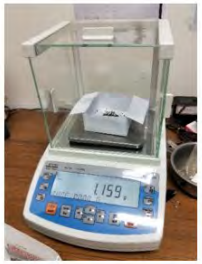
Anion Resin Quaternary R-NH_4^+

Cation PRS Probe

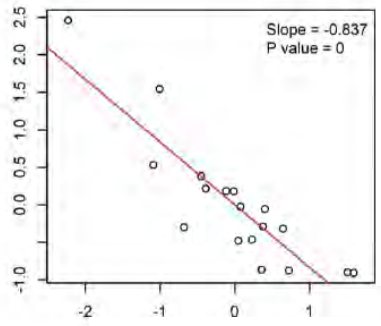
adsorbs:
NH_4^+, K^+, Ca^{2+}, Mg^{2+}, etc.

Cation Resin sulfonic acid R-SO_3^-

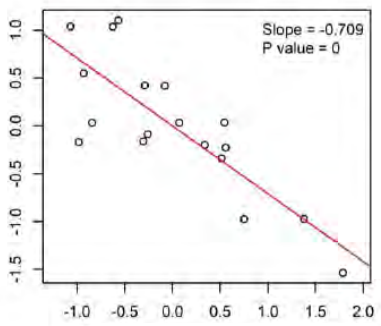
Litter decomposition
(teabag experiment)



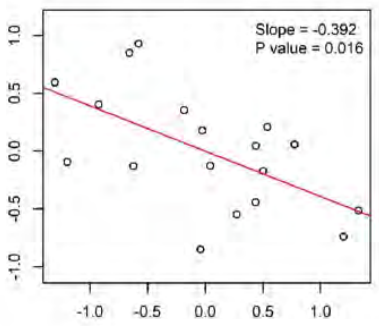
Decomposition rate (k)



Soil depth



Elevation



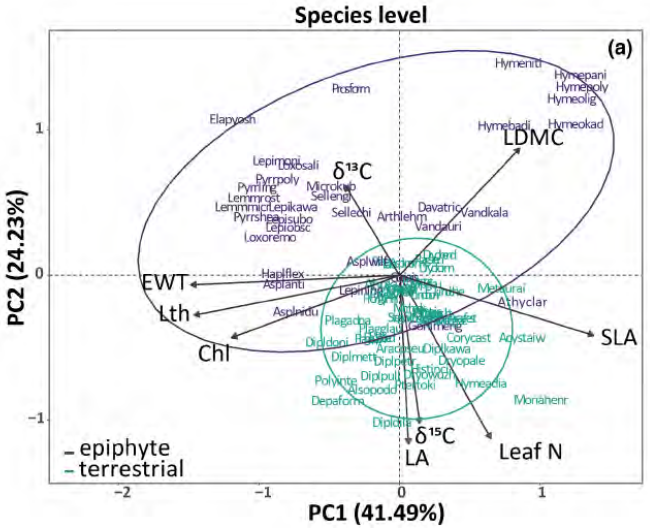
Soil pH

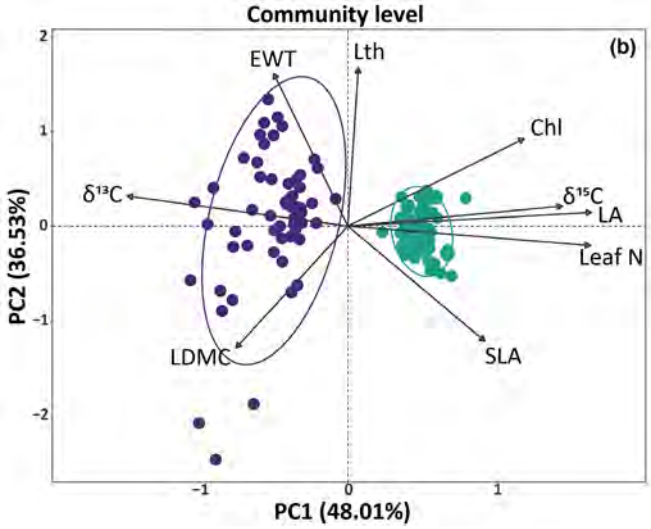
(prepared by
Po-Yu Lin, 林柏佑)

Comparing trait syndromes between Taiwanese subtropical terrestrial and epiphytic ferns

Kenny Helsen
postdoc (2021)

Jéssica L. Viana
postdoc (2022-24)





Helsen K., Viana J.L., Lin T.-Y, Kuo L.-Y. & Zelený D.* (2023): Comparing trait syndromes between Taiwanese subtropical terrestrial and epiphytic ferns and lycophytes at the species and community level. *Journal of Vegetation Science*, 34:e13220, https://doi.org/10.1111/JVS.13220

The life cycle of the research lab

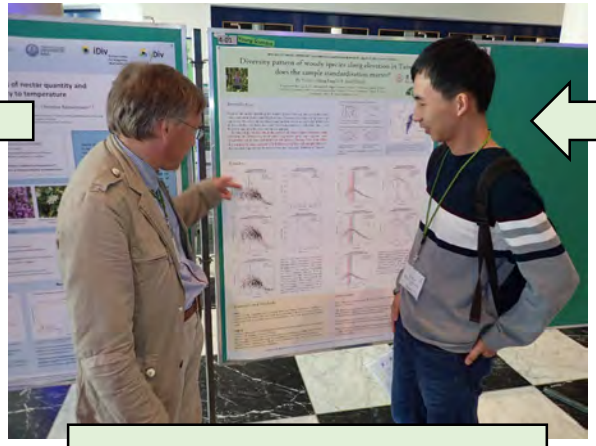
Collecting data in the field …

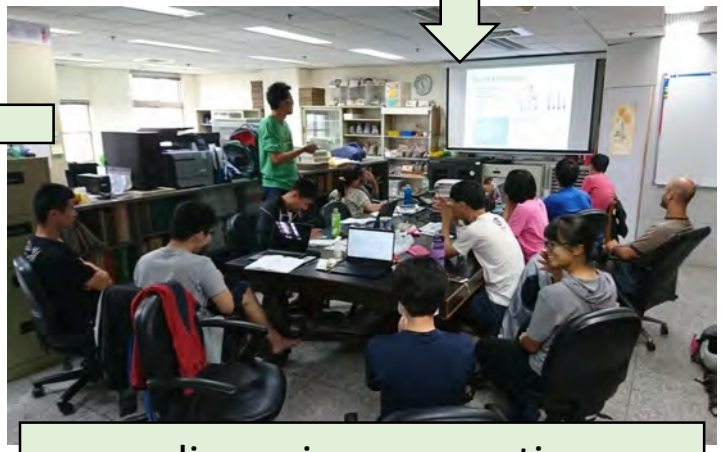
… process-ing them in the lab …

Journal of Vegetation Science

RESEARCH ARTICLE

Climate and soil differentially affect species, trait and diversity patterns of woody overstorey and fern understorey in a subtropical forest along an elevation gradient in Taiwan





… and hopefully publishing!

… presenting internationally …

… discussing, presenting, discussing again …

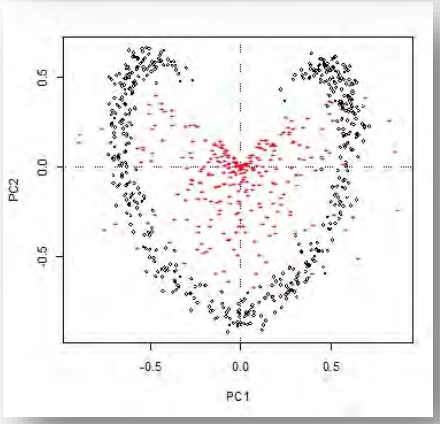
Teaching

Methods of Vegetation Survey
(植群調查方法與實作)

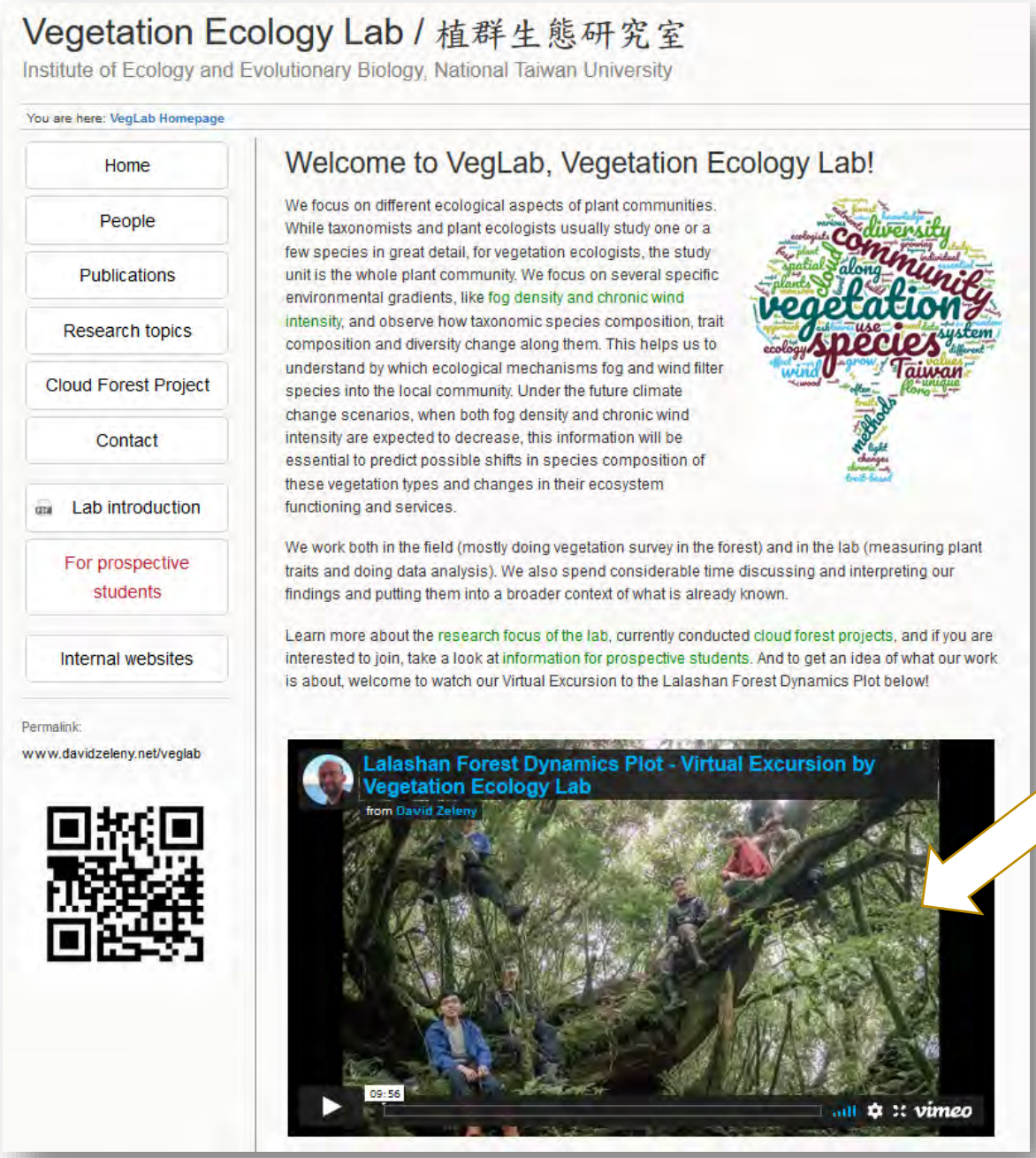
Vegetation Ecology (植群生態學)

Mastering Research Writing and Publishing in Ecology (精通生態學研究寫作與出版)

Introduction to R for Ecologists
(R語言在生態學的應用)



Numerical Methods in Community Ecology
(群聚生態學分析方法)



Thank you for your attention!

… and welcome to check our video excursion to Lalashan Forest Dynamics Plot!

NSTC 國家科學及技術委員會
National Science and Technology Council