Development of hybrid models for the operational retrieval of vegetation traits from the hyperspectral CHIME mission

Use RTMs (e.g. SCOPE, PROSPECT DyN – SAIL) to generate a LUT composed by pairs (e.g. 1000) of vegetation parameters and spectra.

Active learning (AL) Select the most representative samples from the LUT via a diversity or entropy criteria. Later, add non vegetated spectra.

Train GPR algorithms With the LUT optimized for vegetated and non-vegetated surfaces, train probabilistic ML algorithms.

Validate the models Assess models’ performance against field data and vegetation reference scenes, part of the E2E processing chain.

- Hybrid modelling reduces dependence on field data
- AL+GPR: fast, accurate, general and provides uncertainties (a must in RS products)
- v1.8 models applied successfully to real PRISMA images resampled to CHIME settings