

## Sensitivity of the ECMWF Land surface model to vegetation and LU/LC maps

**Abstract:** The effects of vegetation and land use/land cover maps on surface energy and carbon fluxes predictions from land surface model are investigated. The model is applied at global scale and a comparison between two configurations using different land cover maps is performed. In the first configuration, the land cover is based on the operational GLCCv1.2 map, in the second the ESA-CCI land cover map is used.

Based on these two configurations, the observation operator that disaggregates the satellite-based leaf area index into high and low vegetation components is also modified to ensure optimal conservation of the observed LAI. The Seasonal variability of the vegetation cover is also investigated by introducing a modified lamber-beer formulation that allows varying the vegetation cover as a function of the LAI.

The impact of these changes on surface fluxes derived from offline runs of the ECMWF land surface scheme is studied. The near-surface air temperature and humidity derived from coupled runs using the ECMWF Integrated Forecasting system (IFS) will be shown to respond to vegetation changes.