

Table of Contents

Editorial advisors	6
Table of Authors	7
Preface	11
1 Aims and Tasks of ECOMONT	13
1.1 Introduction	13
1.2 Objectives of ECOMONT	14
1.3 Composite experimental sites along European transects	15
1.4 Research topics and contributing partner teams	16
1.5 Up-scaling from leaf to landscape level using the example of atmospheric gas exchange processes	22
1.6 Application and dissemination of scientific results of ECOMONT	28
2 Experimental Sites of ECOMONT	35
2.1 Stubai Valley composite landscape, Tyrol, Austria	35
2.2 Passeier Valley composite landscape, Italy	46
2.3 Monte Bondone composite landscape, Italy	60
2.4 Rotenbach composite landscape, Switzerland	74
2.5 Pyrenees composite landscape, Spain	83
2.6 The Allt a'Mharcaidh Catchment, Scotland	94
3 Methods	105
3.1 Soils	105
3.2 Plant community classification and cover estimation	124
3.3 Canopy Structure and primary production	127
3.4 Water relations of ecosystems and hydrology of catchments	130
3.5 Microclimate, energy budget and CO ₂ gas exchange of ecosystems	135
3.6 Gas exchange between experimental sites and the atmosphere	145
3.7 Plant-ecosystem interactions	150
3.8 Stable isotope analysis	164
3.9 Effects of land-use changes on animal diversity and plant-animal interactions	170
3.10 Remote sensing - approach and goals	175
3.11 GIS - contents and goals	180
3.12 Modelling approaches in ECOMONT	188
3.13 Potential risks through land-use changes	218
4 Results of the first Project Part	225
4.1 Effects of land-use changes on soils along the Eastern Alpine Transect	225
4.2 The impact of land-use on vegetation along the Eastern Alpine Transect	235
4.3 Leaf photosynthesis, nitrogen contents and specific leaf area of grassland species in mountain ecosystems under different land-use	247
4.4 Patterns of consumer diversity under different land-use practices along the Alpine Transect	256
4.5 Architectural properties of forest canopies: an indirect approach	260
4.6 CO ₂ and water vapour exchange between the composite test area and the atmosphere over Monte Bondone	268
4.7 Quantitative analysis of the distribution of vegetation Types on an Alpine hillslope using the G-model approach	271
4.8 Canopy structure, radiation balance and evapotranspiration in managed and abandoned hay meadows at Rotenbach, Switzerland	280
4.9 Results from the Pyrenean site on history of management, Soil characteristics and vegetation Distribution	289
4.10 Results from the Allt a'Mharcaidh Site, Scotland	304
5 References	339