

## Contents

Preface, O. Urban, M. Šprtová, K. Klem	7
Attribution of European temperature variability during 1882–2010: A statistical perspective, (J. Mikšovský, P. Pišoň)	10
Heat waves over Central Europe in ALADIN-Climate/CZ regional climate model: evaluation and future projections (O. Lhotka, A. Farda, J. Kyselý)	14
Köppen–Geiger climate classification by different regional climate models according to the SRES A1B scenario in the 21st century (B. Szabó-Takács, A. Farda, P. Zahradníček, P. Štěpánek)	18
Documentary evidence in the study of past hydrometeorological extremes in South Moravia (K. Chromá, R. Brázdil, H. Valášek, L. Dolák, L. Řezníčková)	22
Documentary evidence as a source of data for studying droughts in the Czech lands (L. Řezníčková, R. Brázdil, O. Kotyza, H. Valášek)	26
Selected drought impacts in South Moravia in the 18th and 20th centuries based on documentary evidence, (L. Dolák, R. Brázdil, L. Řezníčková, H. Valášek)	30
Drivers of soil moisture trends in the Czech Republic between 1961 and 2012 (M. Trnka, R. Brázdil, J. Balek, D. Semerádová, P. Hlavinka, M. Možný, P. Štěpánek, P. Dobrovolný, P. Zahradníček, M. Dubrovský, J. Eitzinger, B. Fuchs, M. Svoboda, M. Hayes, Z. Žalud)	34
Influence of variable weather on incident solar radiation and its spectral composition in the Ostrava region, Czech Republic (M. Opálková, T.M. Robson, M. Navrátil, V. Špunda)	38
LINCOLN – an algorithm for filtering daily NDVI MODIS data and deriving the start of the season (R. Bohovic, P. Hlavinka, D. Semerádová, J. Bálek, T. Tadesse, M. Hayes, B. Wardlow, M. Trnka)	42
Reliability of regional crop yield predictions in the Czech Republic based on remotely sensed data (P. Hlavinka, D. Semerádová, J. Bálek, R. Bohovic, Z. Žalud, M. Trnka)	46
A system for environmental monitoring of the Russian Vostochny spaceport (V. Mochalov, O. Grigorieva, O. Brovkina, S. Potrjasaev)	50
Flux footprints in different ecosystems (L. Macálková, K. Havránková, M. Pavelka)	54

<b>Automated eddy covariance data quality control for long-term measurements (L. Šigut, M. Mauder, P. Sedlák, M. Pavelka, V. Špunda)</b>	<b>58</b>
<b>The Bowen Ratio/Energy Balance method and detailed temperature profile measurements to improve data quality control (G. Pozníková, M. Fischer, M. Orság, M. Trnka, Z. Žalud)</b>	<b>62</b>
<b>Selection of a new site for eddy covariance research in Vietnam – Vietnamese and CzechGlobe cooperation (V. X. Nguyen, M. Pavelka, K. Havráneková, S. N. Hoang, Q. T. Lai, S. V. Dang, T.V. Tran, M. T. Ton, C. Q. Truong, N. H. Pham, C. T. Tran)</b>	<b>66</b>
<b>Orchids of Nepal: phytogeography and economic importance (B. Timsina, M.B. Rokaya, P. Kindlmann, Z. Münzbergová)</b>	<b>70</b>
<b>Are there any changes in the beginning of flowering of important allergens in the Czech Republic? (L. Bartošová, L. Hájková, V. Kožnarová, M. Možný, M. Trnka, Z. Žalud)</b>	<b>74</b>
<b>Summer fluxes of nitrous oxide from boreal forest (K. Machacova, M. Pihlatie, E. Halmeenmäki, M. Pavelka, J. Dušek, J. Bäck, O. Urban)</b>	<b>78</b>
<b>The relationships of soil CO<sub>2</sub> flux with selected Norway spruce root parameters and sterol content in the soil (F. Holub, T. Fabiánек, K. Večeřová, M. Moos, M. Oravec, J. Tríška, I. Marková, M. Edwards, P. Cudlin)</b>	<b>82</b>
<b>Convergence of morphological, biochemical, and physiological traits of upper and lower canopy of European beech leaves and Norway spruce needles within altitudinal gradients (P. Rajsnerová, K. Klem, K. Večeřová, B. Veselá, K. Novotná, L. Rajsner, P. Holub, M. Oravec, O. Urban)</b>	<b>86</b>
<b>Leaf area index development and radiation use efficiency of a poplar short rotation coppice culture (A.M. Tripathi, M. Fischer, M. Trnka, M. Orság, S.P.P. Vanbeveren, M.V. Marek)</b>	<b>90</b>
<b>Analysis of poplar water-use efficiency at Domanínek experimental site (M. Hlaváčová, M. Fischer, A.M. Tripathi, M. Orság, M. Trnka)</b>	<b>94</b>
<b>Long-term productivity of short rotation coppice under decreased soil water availability (M. Orság, M. Fischer, A.M. Tripathi, Z. Žalud, M. Trnka)</b>	<b>98</b>
<b>Interactive effects of UV radiation and drought on the accumulation of flavonols in selected herbs and grass in a mountain grassland ecosystem (B. Veselá, K. Novotná, P. Rajsnerová, K. Klem, P. Holub, O. Urban)</b>	<b>102</b>

Interactive effects of elevated CO <sub>2</sub> concentration, drought, and nitrogen nutrition on yield and grain quality of spring barley and winter wheat (K. Novotná, P. Rajsnerová, B. Veselá, K. Klem)	106
The effect of drought and nitrogen fertilization on the production, morphometry, and spectral characteristics of winter wheat (P. Trunda, P. Holub, K. Klem)	110
The influence of reduced precipitation supply on spring barley yields and the ability of crop growth models to simulate drought stress (E. Pohanková, M. Orság, P. Hlavinka)	114
Surface water temperature modelling to estimate Czech fishery productivity under climate change (E. Svobodová, M. Trnka, R. Kopp, J. Mareš, P. Spurný, L. Pechar, I. Beděrková, M. Dubrovský, Z. Žalud)	118
Diurnal changes of monoterpane fluxes in Norway spruce forest (S. Jurán, S. Fares, K. Křížmal, Z. Večeřa, O. Urban)	122
Comparison of emissions of biogenic volatile organic compounds from leaves of three tree species (P. Holíšová, K. Večeřová, E. Pallozzi, G. Guidolotti, R. Esposito, C. Calfapietra, O. Urban)	126
Effects of vegetation season and needles' position in spruce canopy on emissions of volatile organic compounds (K. Večeřová, P. Holíšová, E. Pallozzi, G. Guidolotti, C. Calfapietra, O. Urban)	130
High night temperature-induced accelerated maturation of rice panicles can be detected by chlorophyll fluorescence (D. Šebela, C. Quiñones, J. Olejníčková, K.S.V.Jagadish)	134
Elevated temperature stimulates light-induced processes that contribute to protecting photosystem II against oxidative stress (Z. Materová, M. Štroch, I. Holubová, J. Sestřenková, M. Oravec, K. Večeřová, V. Špunda)	138
The thermostability of photosystem II photochemistry is related to maintenance of thylakoid membranes organization (V. Karlický, I. Kurasová, V. Špunda)	142
CN-PAGE as a tool for separating pigment–protein complexes and studying their thermal stability in spruce and barley thylakoid membranes (I. Kurasová, K. Svrčinová, V. Karlický, V. Špunda)	146
Development of methods for breeding high-lipid-content algal strain <i>Chlamydomonas reinhardtii</i> using fluorescence-activated cell sorting (J. Fedorko, D. Buzová, J. Červený)	150
Comparative growth characterization of frequently used substrains of the model cyanobacterium <i>Synechocystis</i> sp. PCC 6803 under varying culture conditions (T. Zavřel, P. Očenášová, M. Sinetová, J. Červený)	154

The importance of hydromorphological analysis in evaluating floodplain disturbances – an upper Stropnice River case study (J. Jakubinský, I. Pelišek, P. Cudlín)	158
Comparison of forestry reclamation and spontaneous succession from plant diversity, production, and economic perspectives (O. Cudlín, T. Faigl, R. Plch, P. Cudlín)	162
Forestry operations focusing on different types of felling related to carbon and economic efficiencies (R. Plch, O. Pecháček, V. Vala, R. Pokorný, P. Cudlín)	166
The influence of land cover changes and landscape fragmentation on provision of the carbon sequestration ecosystem service (V. Pechanec, J. Purkýt, P. Cudlín)	170
Estimating values of urban ecosystem services in Kladno (J. Frélichová, A. Pártl, Z. Harmáčková, D. Vačkář)	174
Testing a statistical forecasting model of electric energy consumption for two regions in the Czech Republic (K. Rajdl, A. Farda, P. Štěpánek, P. Zahradníček)	178
Exploring beliefs about climate change and attitudes towards adaptation among Czech citizens (E. Krkoška Lorencová, D. Vačkář)	182
Authors' index	186