

## Key word index

- actual evapotranspiration, 252
- adjustment, 41
- advection, 311
- aerodynamic and excess resistance, 239
- aerodynamic temperature, 145, 239
- Africa, 405
- Africa
  - East, 481
  - Nile River, 11
  - southern, 296
  - West, 212, 365
- aggregation, 181, 220, 292
- aggregation rules, 217
- agricultural system, 531
- agriculture, 368
- agronomy, 405
- airborne multispectral imagery, 311, 539
- albedo, 223, 228, 476
- Albuquerque basin, USA, 487
- alluvial aquifer, 451
- Alps, Italian, 580
- Alps, Swiss, 105, 333
- anisotropy, 162
- ANSWERS, 598
- applications, 3
- Aral Sea, 76
- Argentina, 126
- Argentina, Buenos Aires Province, 531
- arid land, 168, 234
- arid region, 451
- army, 228
- Arno basin, Italy, 471
- Asian monsoon, 390
- assimilation, 192, 495
- ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer), 120, 168
- ATI (Apparent Thermal Inertia), 207
- atmospheric correction, 539
- atmospheric water vapour, 400
- Austria, Innbach, 563
- Austria, Pollau basin, 16
- AVHRR, 61, 76, 99, 197, 207, 231, 306
- AVIRIS, 120
- backscattering, 339
- backscattering coefficient, 362
- Bangladesh, 465
- Bangladesh, Jamuna River, 498
- bar dynamics, 498
- bare soils, 368
- basal crop coefficient, 302
- Basilicata, Italy, 207
- basin scale, 321
- beam mode, 526
- BFM (Battlescale Forecast Model), 228
- biomass, 507
- bispectral analysis, 481
- Botswana, 252
- BRDF (Bidirectional Reflectance Distribution Function), 223
- brightness normalization using DEM, 76
- brightness temperature, 412, 415
- Buenos Aires Province (Argentina), 531
- bulk-adjustment, 27
- calibration, weather radar data, 16
- Canada
  - Labrador, 526
  - Mackenzie River, 552
  - Peace-Athabasca delta, 519, 536
  - Quebec, 321
- canopy, 476
- canopy reflectance, 311
- canopy reflectance model, 112
- CASI (Compact Airborne Spectrographic Imager), 513
- Central Asia, 66, 76
- change detection, 333, 405
- Chihuahuan Desert, 168, 234
- classification, 471, 536, 563
- classification
  - land, 601
  - land cover, 371, 455
  - rainfall, 43
  - supervised, 580
- climate change, 87, 123, 126, 405
- climatic variability, 50
- Colorado, USA, 569
- Connecticut River, USA, 462
- convective storms, 481
- correlated data, 225
- cotton, 286
- coupled MIKE SHE/MIKE 11 modelling package, 491
- cypress, 513
- data assimilation, 145, 197
- data fusion, 112, 427
- decision support system, 481
- deep percolation, 583
- deep roots, 252
- delta, 519
- DEM (digital elevation model), 427, 439, 465, 580, 601
- desert, 271
- desert grassland, 234
- dielectric model, 136
- disaggregation, 384
- distributed
  - database, 32
  - hydrological model, 439, 589, 601
  - modelling, 151, 558

- ditch water levels, 491
- drainage basin, 433
- DSL (dry surface layer), 271
- DSL bulk method, 271
- dunes, 162
- Earth observation, 501
- Earth Observing System, 55
- East Africa, 481
- eddy correlation, 220, 311
- eddy covariance, 246
- EFEDA, 181
- Einflußfunktionenverfahren, 16
- El Reno, USA, 187
- elevation height, 455
- Elmley Marshes (north Kent, England), 491
- emissivity, 168
- emissivity, surface, 276
- energy balance, 151, 181, 259, 306
- energy balance fluxes, 311
- EROS dataset (1 km<sup>2</sup> areas), 225
- error covariance, 197
- errors, 41
- ERS-SAR, 327
- Escalante River, Utah, USA, 539
- Essex, UK, 327
- ESTAR, 400
- evaporation, 181
- evaporation (from dry soil), 271
- evapotranspiration, 123, 223, 239, 246, 259, 265, 286, 276, 302, 306, 311, 476, 574
- evapotranspiration, actual, 252
- excessive runoff, 362
- exotic species, 539
- extreme precipitation, 35
- feature extraction, 427
- FIFE, 202
- flash flood forecasting, 439
- flatlands, 531
- flood, 362
- flood
  - affected frequency, 455
  - depth, 465
  - forecasting, 35, 439, 586, 592
  - hazard map, 455
  - mapping, 465, 519, 536
  - plain, 365, 465
  - water depth, 455
- FLOODGEN, 362
- Florida, USA, 513
- Florida Everglades, USA, 507
- footprint analysis, 311
- forcing variables, 151
- forecasting snowmelt runoff, 66
- forest brightness temperature, 112
- forest cover, 569
- fractional coverage of rain, 38
- France
  - Normandy, 362
  - Rhône River delta, 446
  - Seine basin, 592
- Ganges-Bhramaputra-Meghna basin, 498
- geological division, 455
- geometric correction, 76
- geostatistical analysis, 379
- geostatistics, 225
- German mid-mountain range, 349
- Germany, 598
- Germany, Zeulenroda, 563
- GEWEX, 390
- GIS, 66, 76, 81, 379, 433, 439, 446, 462, 498, 586, 598
- GIS analysis of irrigated urban landscape, 458
- glacier hydrology, 99
- glacierized basin, 99
- global, 87, 552
- global monthly rain, 38
- GOES, 231, 286
- GPR (ground penetrating radar), 136
- grass, 234
- grassland, 223
- grid, 16
- groundwater flow, 487
- groundwater recharge, 451
- hazard rank, 455
- HBV model, 595
- heat flux, 187
- heterogeneity, 384
- heterogeneous surfaces, 220
- heterogeneous terrain, 292
- high spatial resolution, 281
- HYDALP, 117, 595
- hydraulic modelling, 519
- hydroclimatology, 151
- hydrogen isotopes, 462
- hydrological modelling, 123, 192, 212, 321, 374, 433, 476, 563, 569
- hydrological parameters, 349
- hydrological processes, 531
- ice melt runoff, 105
- image
  - classification, 531
  - geo-referencing, 531
  - processing, 580
- incidence angle, 526
- infiltration, 583
- infrared, 3
- infrared radiative thermometer, 231
- Inn basin, Switzerland, 117
- Innbach, Austria, 563
- intensive agriculture, 362
- interferometric coherence, 339
- inverse modelling, 354
- Iowa, USA, 306
- irrigated crops, 217
- irrigation volumes, 446
- Italy,
  - Alps, 580
  - Arno basin, 471
  - Basilicata, 207

- Jamuna River, Bangladesh, 498
- Java, 32
- Jornada, 168
- Kalman filter, 495
- Karakoram mountains, 99
- Karasu basin, Turkey, 81
- Kimberly, Idaho USA, 302
- kriging, 93
- LAI (leaf area index), 112, 234, 476
- laboratory study, 136
- Labrador, Canada, 526
- lagoon areas, 531
- Lake Victoria, 481
- land
  - classification, 601
  - cover, 349, 471
  - cover classification, 455
  - degradation, 156
  - surface model, 145, 197
  - surface temperature, 231
  - use, 446, 552
- land-cover classification , 371
- Landsat, 234, 531
- Landsat TM, 252, 451, 471, 476, 491
- landscape, 162
- large eddy simulation, 175
- LAS (large aperture scintillometer), 156
- L-band, 415
- level approach, 349
- linear unmixing, 120
- linearization, 181
- Mackenzie River, Canada, 552
- Makkink equation, 286
- maximum likelihood classification, 513
- mesoscale, 228
- mesoscale modelling, 192
- mesquite, 162
- meteorological, 228
- meteorology, 405
- Meteosat, 481
- Mexico, 217, 286
- MICRO-SWEAT, 316, 384
- microwave, 3, 394
- microwave
  - loss factor, 112
  - radiometer, 22, 390, 412
  - remote sensing, 316, 354
  - passive, 72, 87, 379, 384, 409, 415
- mid-west USA, 139
- mixed precipitation, 46
- model
  - parameterization, 371
  - canopy reflectance, 112
  - dielectric, 136
  - distributed hydrological, 439, 601
  - HBV, 595
  - hydrological, 374, 476
  - land surface, 145, 197
  - NEVE, 126
  - simulation, 574
  - single layer, 281
  - single- and two-source, 239
  - snowmelt runoff, 580
  - SRM, 126
  - two-layer, 409
- modelling, 265, 501
- modelling,
  - coupled MIKE SHE/MIKE 11 package, 491
  - distributed, 151, 558, 589
  - hydraulic , 519
  - hydrological, 123, 192, 212, 321, 433, 563, 569
  - inverse, 354
  - mesoscale, 192
  - rainfall-runoff , 495
  - runoff, 99, 595
  - snow cover, 129
  - solute transport, 563
  - soil evaporation, 316
  - wetland hydrology , 491
- MODFLOW, 252
- MODIS (Moderate-resolution Imaging Spectroradiometer) , 139
- moisture, 156, 228
- monitoring, 72
- monitoring of large mountainous areas, 333
- monsoon
  - 1990, 175
  - Asian, 390
- Monte Carlo simulation, 558
- monthly rain, 38
- monthly rain variance, 38
- morphology, 498
- multi-frequency analysis, 365
- multifrequent airborne SAR, 349
- multiple view angle, 162
- multi-sensor, 536
- multispectral, 168, 507, 513
- multispectral imagery, airborne, 311, 539
- NDVI (normalized difference vegetation index), 306, 507, 513
- neural network, 412, 471, 481
- NEVE model, 126
- New Mexico, USA, 162, 259
- Nile River , 11
- NIMA (National Image and Mapping Agency, USA), 427
- nitrate, 462
- nitrogen isotopes, 462
- NOAA, 76, 552
- NOAA-AVHRR, 117, 123, 212, 333
- NOHRSC, 569
- non-isothermal evaporation, 271
- nonlinear processes, 292
- nonlinear regression, 491
- Normandy, France, 362
- northern, 519
- numerical, 228
- Ob' River, Russia, 93

- object oriented database system, 32
- Ohio River basin, USA, 151
- Oklahoma, USA, 187, 231, 379, 409
- operational, 343
- operations, 3
- optical depth, 394
- parameter estimation, 558
- parameterization, 563
- passive microwave, 72, 112, 384, 379, 390
- passive microwave
  - radiometry, 415
  - satellite remote sensing, 87
  - sensor, 409
- pasture, 231
- PC ARC/INFO and Arc View, 498
- Peace-Athabasca delta, Canada, 519, 536
- physiographic division, 455
- pink beans, 302
- PMM, 43
- Pollau basin (Austria), 16
- precipitation, 3, 22, 41, 433
- precipitation
  - measurement, 46
  - over complex orography, 41
  - radar, 32
  - extreme, 35
  - mixed, 46
- PRMS, 563, 569
- Probable Maximum Precipitation, 35
- progress, 3
- PROMET, 586
- prototype algorithm, 139
- public-domain datasets, 601
- Pyrenees, Spanish, 61
- Quebec, Canada, 321
- radar, 43, 46, 365
- radar
  - data, 16, 495
  - data calibration, 16
  - hydrology, 558
  - rainfall estimates, 41
- radar-gauge quality control, 27
- radar-gauge validation, 27
- Radarsat, 321, 343, 362, 368, 526, 536
- Radarsat SAR, 465
- Radarsat ScanSAR, 333, 374
- radiance, 234
- radiometric surface temperature, 239
- radiometric temperature, 145, 246
- rain cloud duration, 50
- rain frequency, 38
- rain rate, 43
- rainfall, 46, 50
  - classification, 43
  - estimates, 11, 43, 481
  - estimates, radar, 41
- rainfall-runoff modelling, 495
- raingauge, 43
- ranking matrix, 455
- RAPHAEL, 586
- recharge, 487
- Red-Arkansas River basin, USA, 151
- reflectance-based crop coefficient, 302
- reflectivity, 43
- regional scale fluxes, 145
- repeat-pass, 339
- research, 3
- resolution, 72
  - high spatial, 281
  - spatial, 72, 175
  - temporal, 72
  - weather radar data, 16
- Rhône River delta, France, 446
- rice, 446
- Rio Grande, 311
- riparian, 246
- riparian vegetation, 259, 539
- river extraction, 427
- root zone soil water balance, 302
- roughness, 368, 415
- roughness classification, 362
- RRGAT, 27
- runoff, 105, 433, 501
- runoff
  - forecast, 117, 595
  - modelling, 99, 362, 595
  - excessive, 362
  - ice melt, 105
  - snowmelt, 580
- Russia, 93
- SAFARI 2000, 296
- sahel, 583
- SALSA, 156
- salt cedar, 246
- sapflow, 252
- SAR, 321, 339, 354, 592
- SAR
  - data analysis, 371
  - imagery, 368
- SAR/ERS, 495
- satellite, 3, 427
- satellite
  - hydrology, 11
  - imagery, 498
  - rain estimation, 11, 35
  - snow mapping, 55
  - validation, 87
- SAVE, 296
- sawgrass, 507
- scale, 16
- scale of fluctuation, 225
- scaling, 112, 586
- Scandinavia, 123, 595
- ScanSAR mode, 343
- scintillometer, 220
- SEBAL (Surface Energy Balance Algorithm for Land), 252, 286, 574
- SEBI, 181

- sediment, 501
- Seine basin (France), 592
- semiarid*, 156, 220
- semivariograms, 327, 379
- sensible heat flux, 175, 217, 239
- sequential assimilation, 592
- servlet, 32
- SGP97, Southern Great Plains 1997 Experiment, 187, 197, 379, 384, 400
- SGP99, Southern Great Plains 1999 Experiment, 145, 231
- shrubs, 234
- SHYLOC, 491
- Siberia, 93
- simulation, 433, 598
- simulation models, 574
- Sinai, 451
- single- and two-source models, 239
- single layer model, 281
- SIR-C (Shuttle Imaging Radar), 365
- SLURP, 81, 601
- SMMR, 394
- snow, 72, 87, 123, 129, 390, 595
- snow
  - algorithms, 87
  - cover, 55, 87, 117, 139, 580
  - cover estimation, 333
  - cover modelling, 129
  - depth, 72
  - mapping, 61, 339
  - mapping, satellite, 55
  - mapping, sub-pixel, 120
  - water equivalent (SWE), 72, 93, 112, 343
  - wetness, 136
  - covered area, 569
- snowfall, 46
- snowmelt, 117, 126
- snowmelt runoff, 61, 66, 81, 105
- snowmelt runoff model, 580
- snowpack water equivalent monitoring, 374
- soil adjusted vegetation index (SAVI), 302
- soil evaporation, modelling, 316
- soil moisture, 207, 212, 231, 296, 321, 349, 354, 379, 384, 390, 394, 400, 405, 412, 415, 495, 589, 592
- soil
  - moisture variability, 327
  - resistance, 316
  - roughness, 321, 362
  - water, 583
  - water budget, 409
  - water content, 409
  - water flow, 476
- solar radiation, 286
- solute transport modelling, 563
- Sonora, Mexico, 286
- southern Africa, 296
- Southern Great Plains, 239
- Spain, 439
- Spain, Pyrenees, 61
- spatial
  - autocorrelation, 507
  - distribution of flux, 187
  - diversity, 433
  - resolution, 72, 175
  - scale, 379
  - variability, 281
- spatio-temporal, 433
- spectral index, 112
- SPOT, 536
- SPOT VEGETATION, 123
- SRM, 66, 76, 81, 126
- SRM-Java, 117
- SSM/I, 22, 93, 139, 400
- SSM/I rainfall algorithms, 38
- stream, 427
- streamflow forecasting, 61
- structure, 162
- sub-pixel analysis, 61
- sub-pixel snow mapping, 120
- subsurface temperatures, 487
- supervised classification, 433, 580
- surface
  - emissivity, 276
  - energy balance, 281
  - fluxes, 220, 292
  - heterogeneity, 175
  - temperature, 145, 151, 168, 175, 197, 202, 234, 296, 390
- SVAT (soil-vegetation-atmosphere transfer), 145, 151, 156
- SVAT model, 583
- SWAP, 574
- SWE (snow water equivalent), 72, 93, 112, 343
- SWEAT, 583
- Switzerland, Alps, 105, 333
- Switzerland, Inn basin, 117
- Tamarisk, 246, 259, 311
- temperature, 156, 228
- temperature,
  - aerodynamic, 145, 239
  - brightness, 412, 415
  - forest brightness, 112
  - land surface, 231
  - radiometric, 145, 239, 246
  - surface, 145, 168, 175, 197, 202, 234, 390
  - subsurface, 487
- temporal resolution, 72
- terrain analysis, 427
- terrain and canopy effects, 129
- terrain effect, 120
- Territorial Image Synthesis System (TISS), 580
- thermal atmospheric correction, 276
- thermal inertia, 296
- thermal infrared, 168
- Tibetan Plateau, 390
- tillage direction, 368
- TIMS (Thermal Infrared Multispectral Scanner), 168, 187

- TMI (TRMM Microwave Imager), 22, 390
- TOPAZ, 601
- TOPMODEL, 586
- TOVS (TIROS Operational Vertical Sounder), 202
- transmission losses, 451
- tree canopy, 513
- triangle method, 276
- TRMM, 22, 390
- Ts/NDVI space, 212
- Turkey, 265, 574, 601
- Turkey, Karasu basin , 81
- two source, 187
- two-layer model, 409
- UK, Elmley Marshes, north Kent, England, 491
- UK, Essex, 327
- upwind fetch, 311
- urban landscape water demand, 458
- urban study area, 458
- USA,
  - Albuquerque basin , 487
  - Colorado, 569
  - Connecticut River, 462
  - Escalante River, Utah, 539
  - Florida Everglades, 507
  - Iowa, 306
  - Kimberly, Idaho , 302
  - mid-west, 139
  - New Mexico, 162, 259
  - NIMA (National Image and Mapping Agency), 427
  - Ohio River basin, 151
  - Oklahoma, 187, 231, 379, 409
  - Red-Arkansas River basin, 151
  - Utah, 228, 458
- validation, 151, 192, 281
- variational assimilation, 592
- vegetation, 156, 231, 354, 552
- vegetation parameters, 349
- vegetation quadrats, 507
- VIC (Variable Infiltration Capacity), 202
- visible, 3
- visible/infra-red, 72
- VIS-NIR-TIR multidirectional remote sensing, 281
- WASMOD, 563
- water
  - balance, 433
  - level recorders, 491
  - management, 601
  - resources, 61, 601
  - resources management, 580
  - supply wellfield, 513
  - table fluctuations, 531
- wavelets, 181
- WDVI (weighted difference vegetation index), 476
- weighted multiple regression, 41
- West Africa, 50, 212, 365
- wetland, 365, 519, 526, 536
- wetland hydrological modelling, 491
- wetland impact monitoring, 513
- wheat, 286
- winds, 228
- Zeulenroda, Germany, 563
- Z-R, 43