Supplement of
Implementing methane dynamics into the LPJmL6 model

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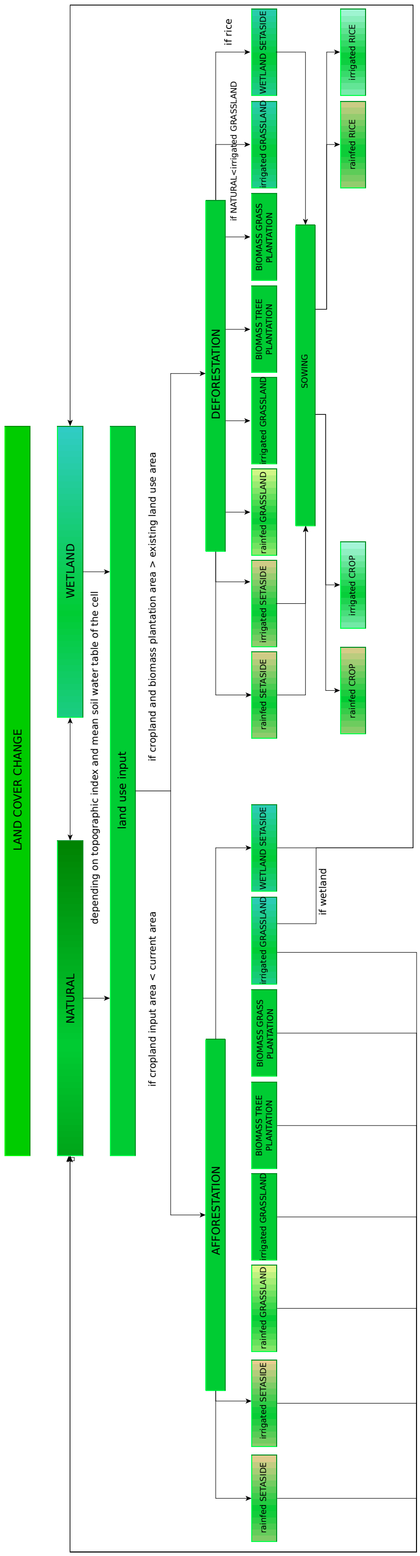
The LPJmL version 6 used in this study is based on internal code version 5.10.2, which extends and corrects the latest published model release 5.7.9 (Wirth et al., 2024). Relative to that version, the code includes revised formulations for leaf nitrogen demand and uptake, adjustments to phenology and tissue turnover, and updated parameter values for vegetation and soil nitrogen processes. Minor inconsistencies in earlier implementations (for example in unit conversions and temperature responses) were removed. A complete and up-to-date description of all code modifications and parameter changes is provided in the file `CHANGELOG.md` included in the model repository.

Because LPJmL6 is computationally intensive, we also offer a fast mode for applications that do not require explicit CH_4 dynamics. The main cost arises from sub-daily CH_4/O_2 diffusion. In this mode, the new decomposition–diffusion routine is replaced by the legacy decomposition module (oxygen-independent) as described in Schaphoff et al. (2018), eliminating the sub-daily step and markedly reducing runtime. We provide an internal benchmark to show the differences between the predecessor model LPJmL5.10.2, the LPJmL6 and the LPJmL6$_{noCH_4}$.This comparison is presented in a separate Supplement prepared specifically for this model-version comparison.

Figures S2 and S3 show the simulated temporal evolution of global terrestrial carbon stocks and fluxes produced by LPJmL6. Figure S2 presents modelled vegetation and soil carbon pools, while Figure S3 displays the terrestrial carbon sink and fire-related carbon emissions over the historical period.

Figures S4, S5, S6, and S7 show the ability of LPJmL to reproduce observed yield patterns for maize, wheat, rice, and soybean, respectively. These plots are based on the GGCMI Phase1 simulation ensemble (Müller et al., 2017).

Figure S8 shows the discharge evaluation at 285 gauging stations using data from R-ArcticNET (v4.0) (Lammers et al., 2001, 2016) and (ii) global monthly discharge records from the RivDIS database (v1.1) (Vörösmarty et al., 1998). The left panels display monthly discharge time series simulated with LPJmL6.0 (red) and LPJmL5.10 (blue) compared with gauge observations (black). The right panels show the corresponding mean seasonal cycle, together with performance metrics (W, R^2, NME, NMSE) and station coordinates.



We extended the standard LPJmL6 land-use change routine to explicitly represent wetland-related land-use transitions. The new scheme distinguishes natural wetlands, wetland set-aside and rice grown on former wetlands, and tracks the flows of area between these classes and other land-use types, as summarized in the flowchart.

Figure S1. Flowchart of the extended land-cover and land-use change routine in LPJmL6 with explicit representation of wetland land-use transitions. For each grid cell, land cover is first divided into natural and wetland fractions according to a topographic index and the mean soil water-table depth. Prescribed land-use areas for cropland, grassland and biomass plantations are then imposed via afforestation and deforestation steps, followed by a sowing step that allocates cropland to rainfed and irrigated crops, including rainfed and irrigated rice; arrows indicate the order and direction of all possible transitions between land-use classes.

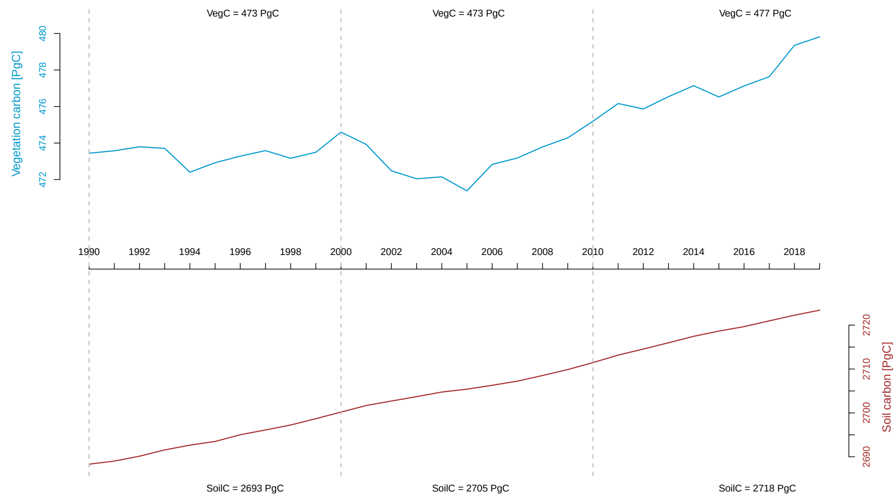


Figure S2. Terrestrial vegetation and soil carbon estimated by LPJmL6.

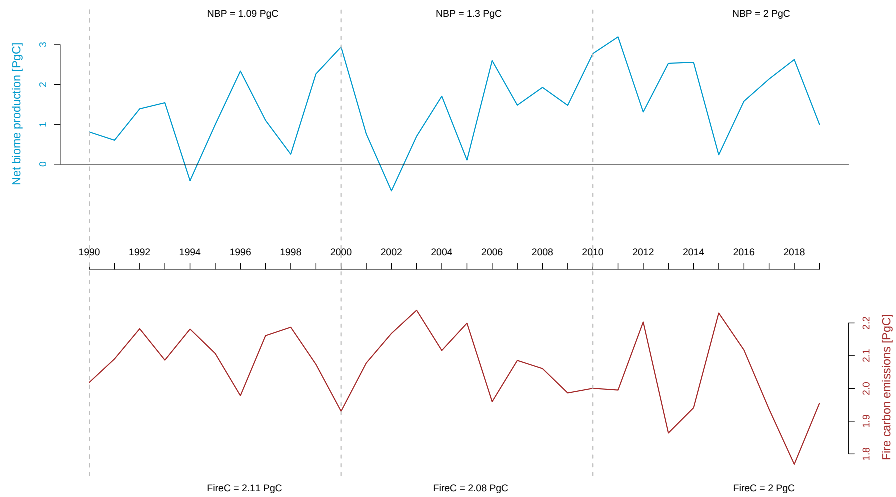


Figure S3. Terrestrial sink and fire carbon emissions estimated by LPJmL6

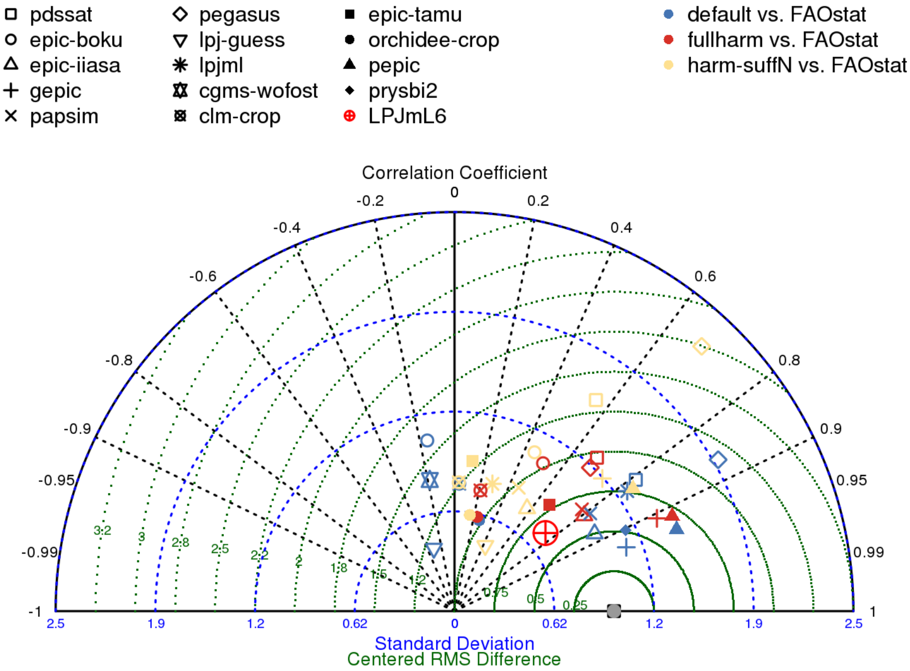


Figure S4. Taylor diagram of nationally aggregated maize yields as simulated by the GGCMI Phase 1 ensemble (Müller et al., 2017) and LPJmL6. As per unchangeable settings of the GGCMI crop model evaluation tool (Shin et al., 2017; Müller et al., 2017), LPJmL6 is depicted as red circled plus but used different crop management inputs than specified in the GGCMI phase 1 "fullharm" setting that is depicted in red otherwise.

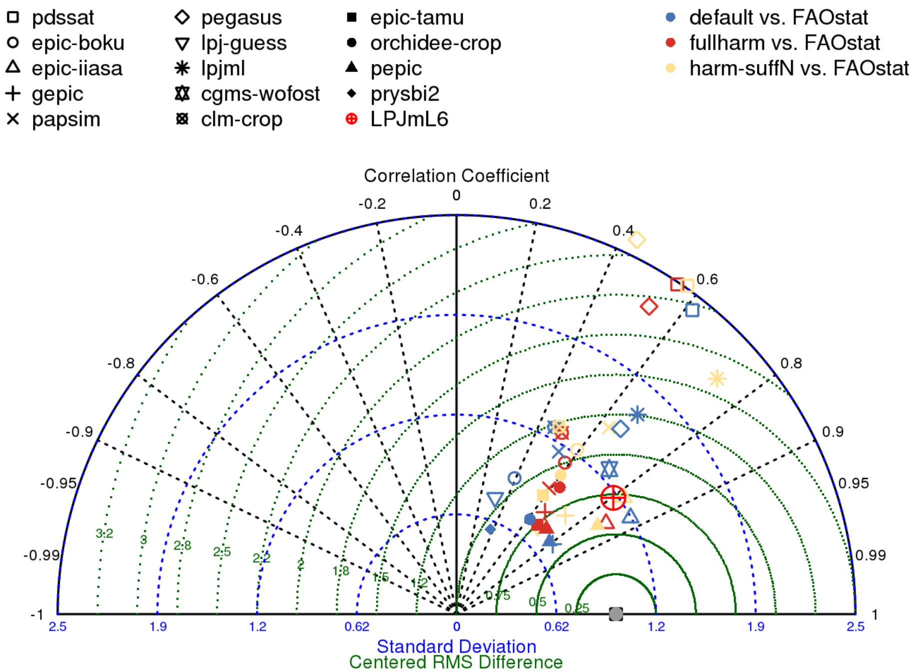


Figure S5. Taylor diagram of nationally aggregated wheat yields as simulated by the GGCMI Phase 1 ensemble (Müller et al., 2017) and LPJmL6. As per unchangeable settings of the GGCMI crop model evaluation tool (Shin et al., 2017; Müller et al., 2017), LPJmL6 is depicted as red circled plus but used different crop management inputs than specified in the GGCMI phase 1 "fullharm" setting that is depicted in red otherwise.

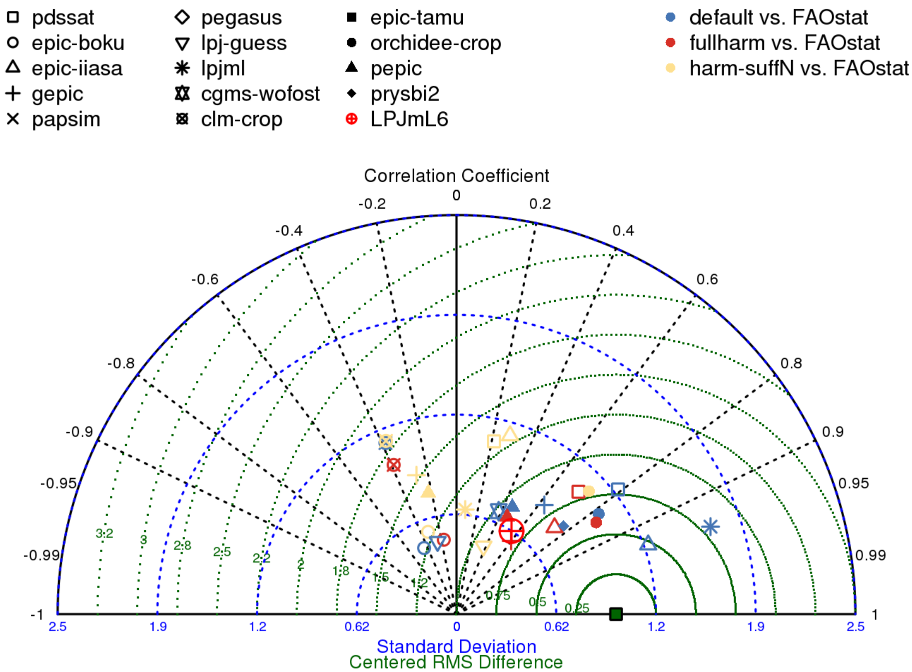


Figure S6. Taylor diagram of nationally aggregated rice yields as simulated by the GGCMI Phase 1 ensemble (Müller et al., 2017) and LPJmL6. As per unchangeable settings of the GGCMI crop model evaluation tool (Shin et al., 2017; Müller et al., 2017), LPJmL6 is depicted as red circled plus but used different crop management inputs than specified in the GGCMI phase 1 "fullharm" setting that is depicted in red otherwise.

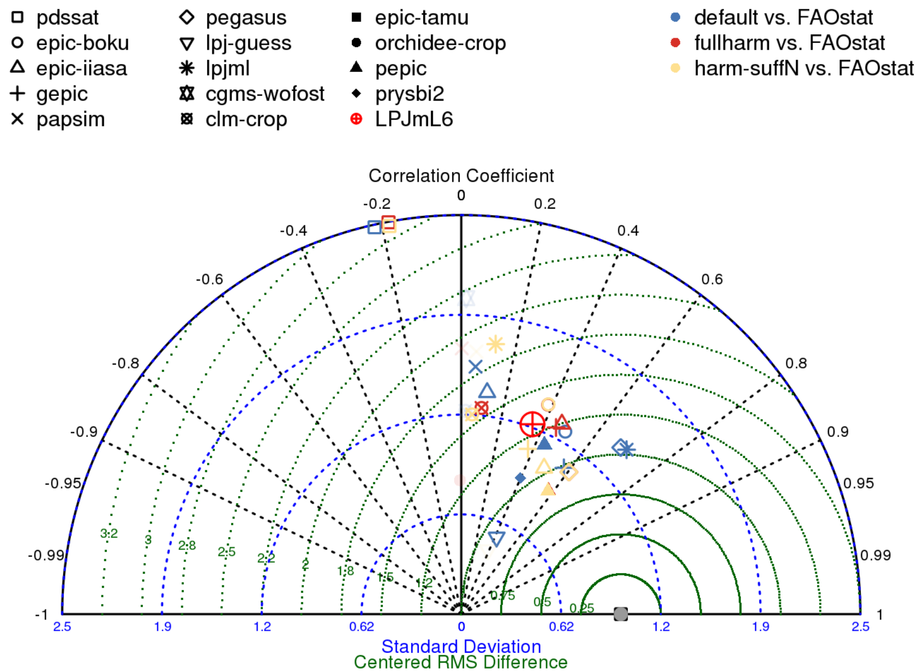
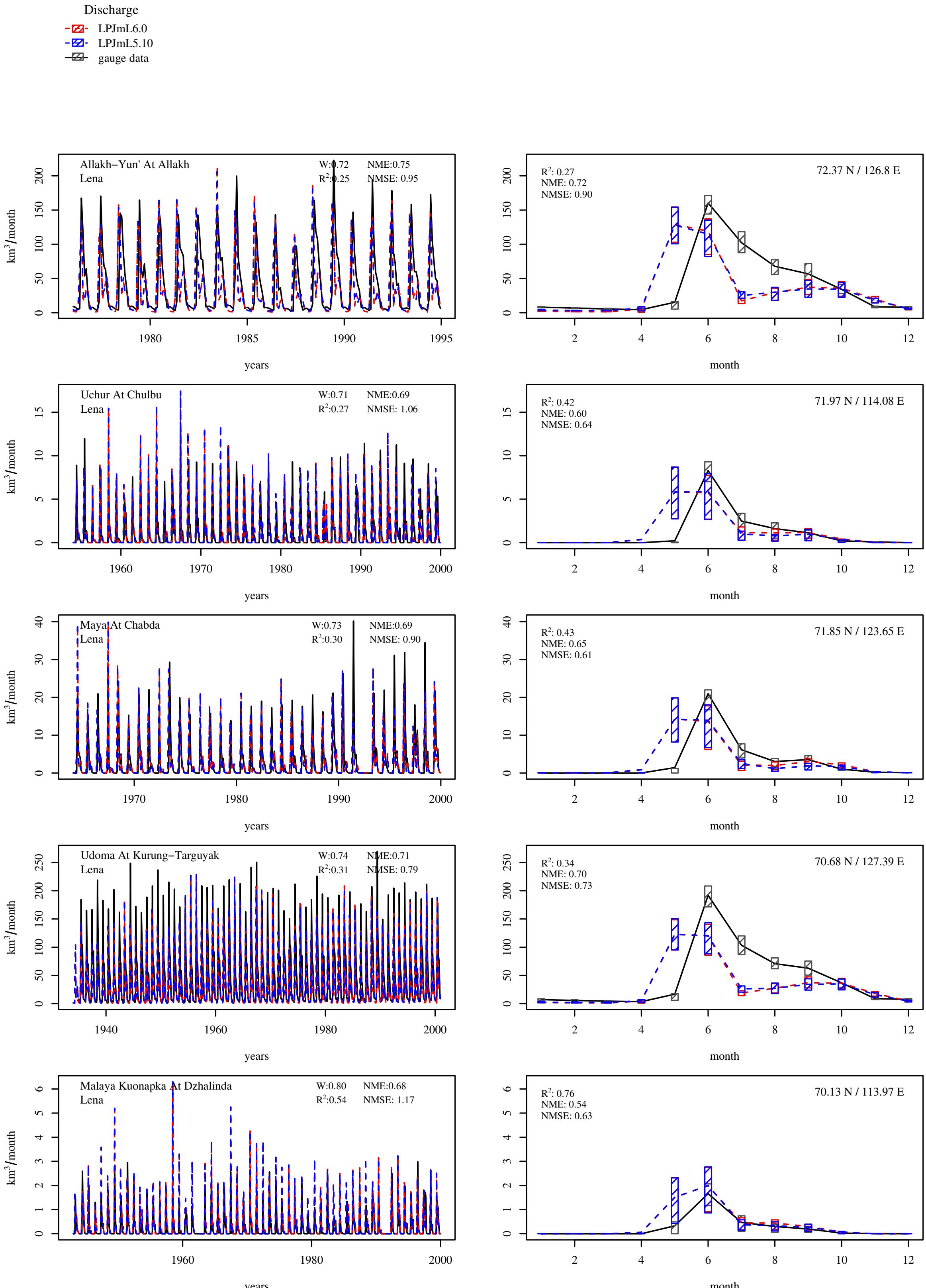
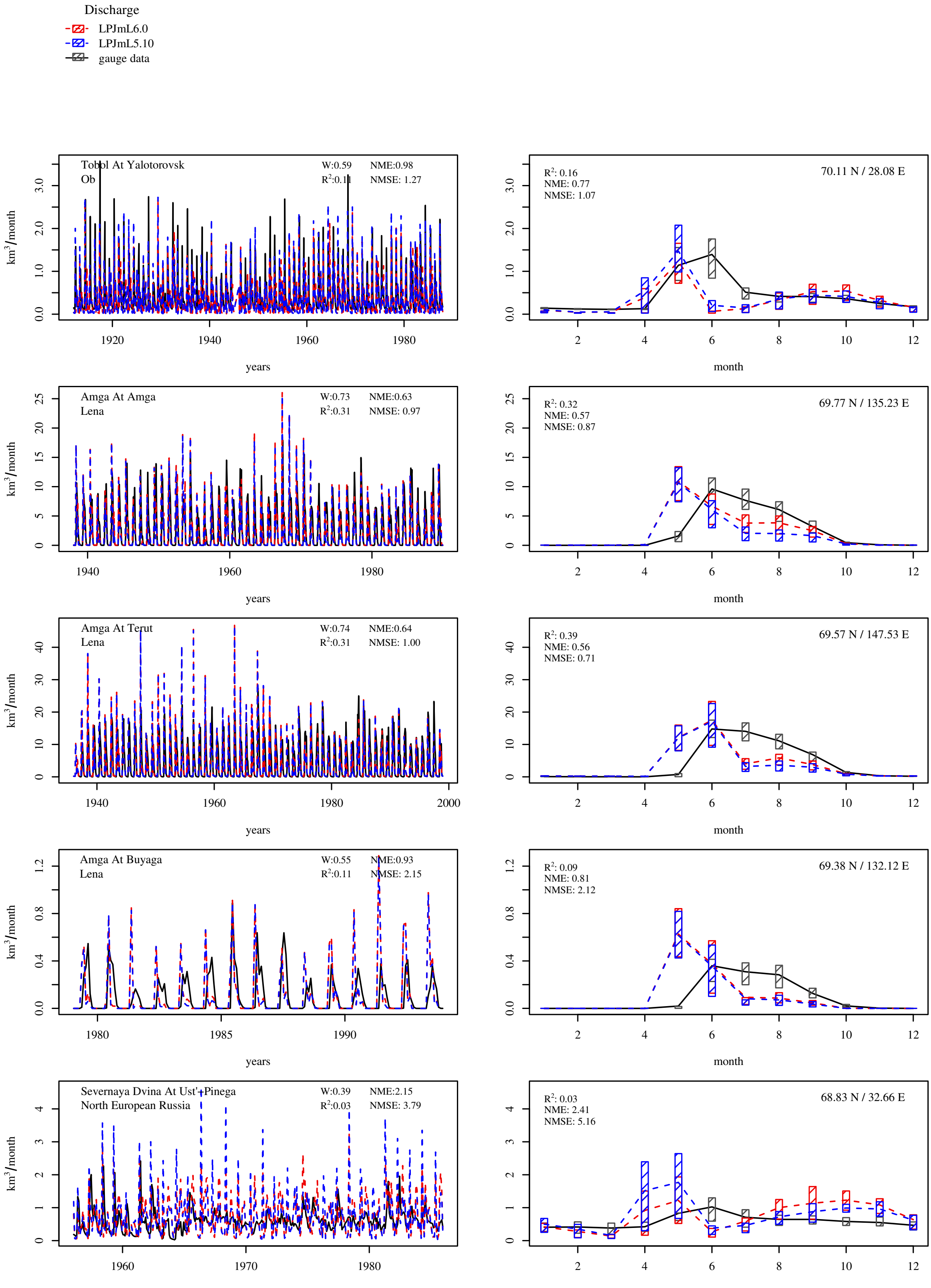
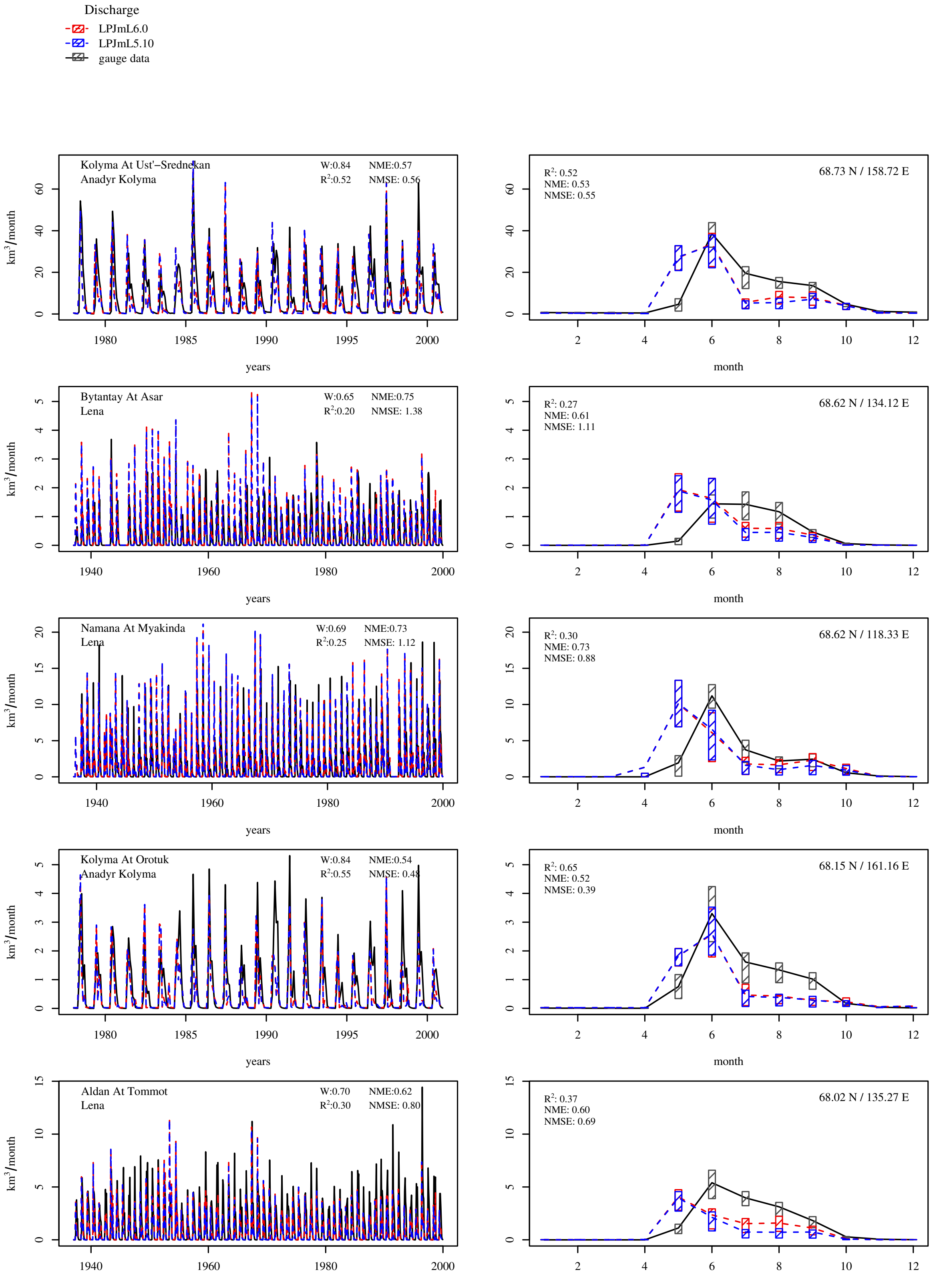
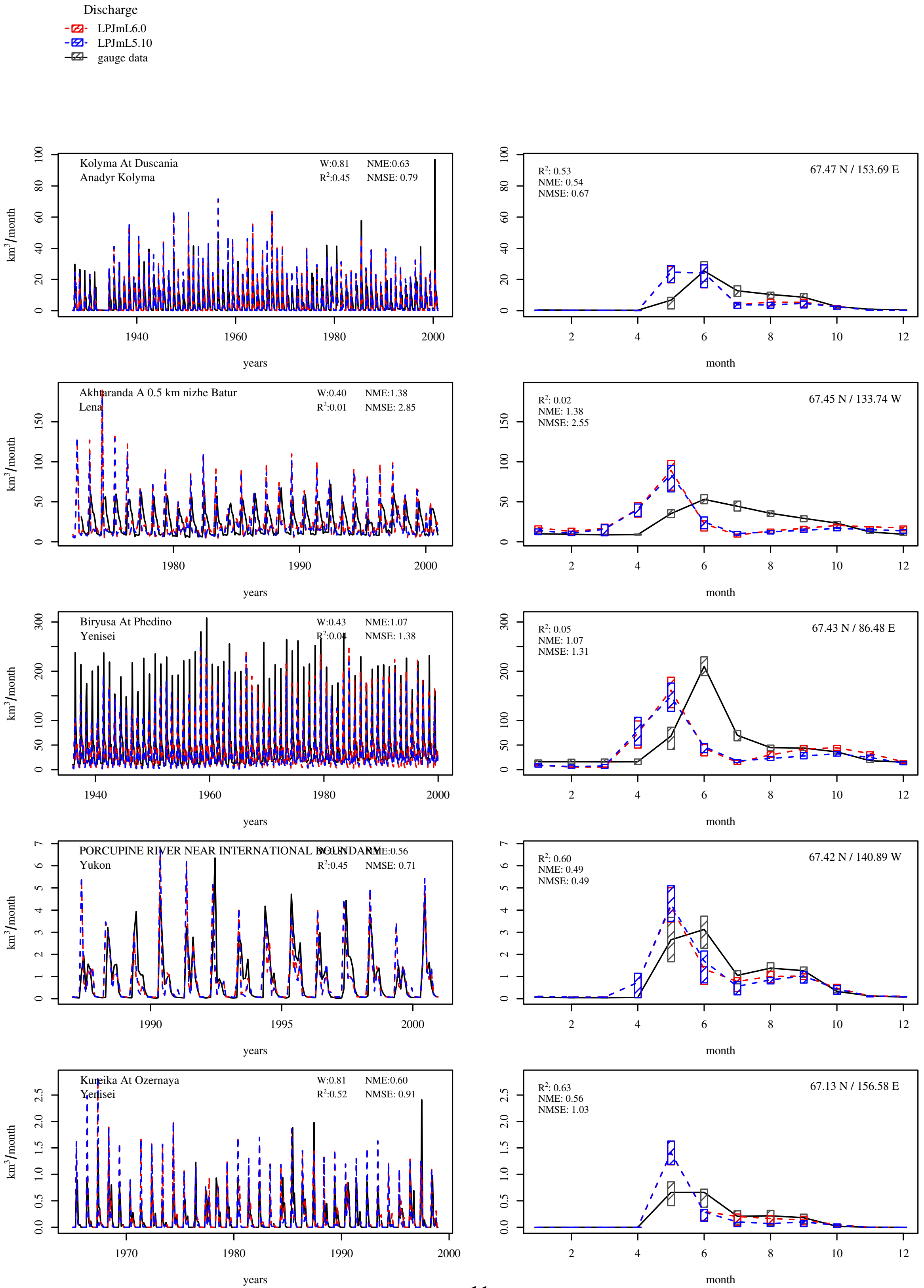


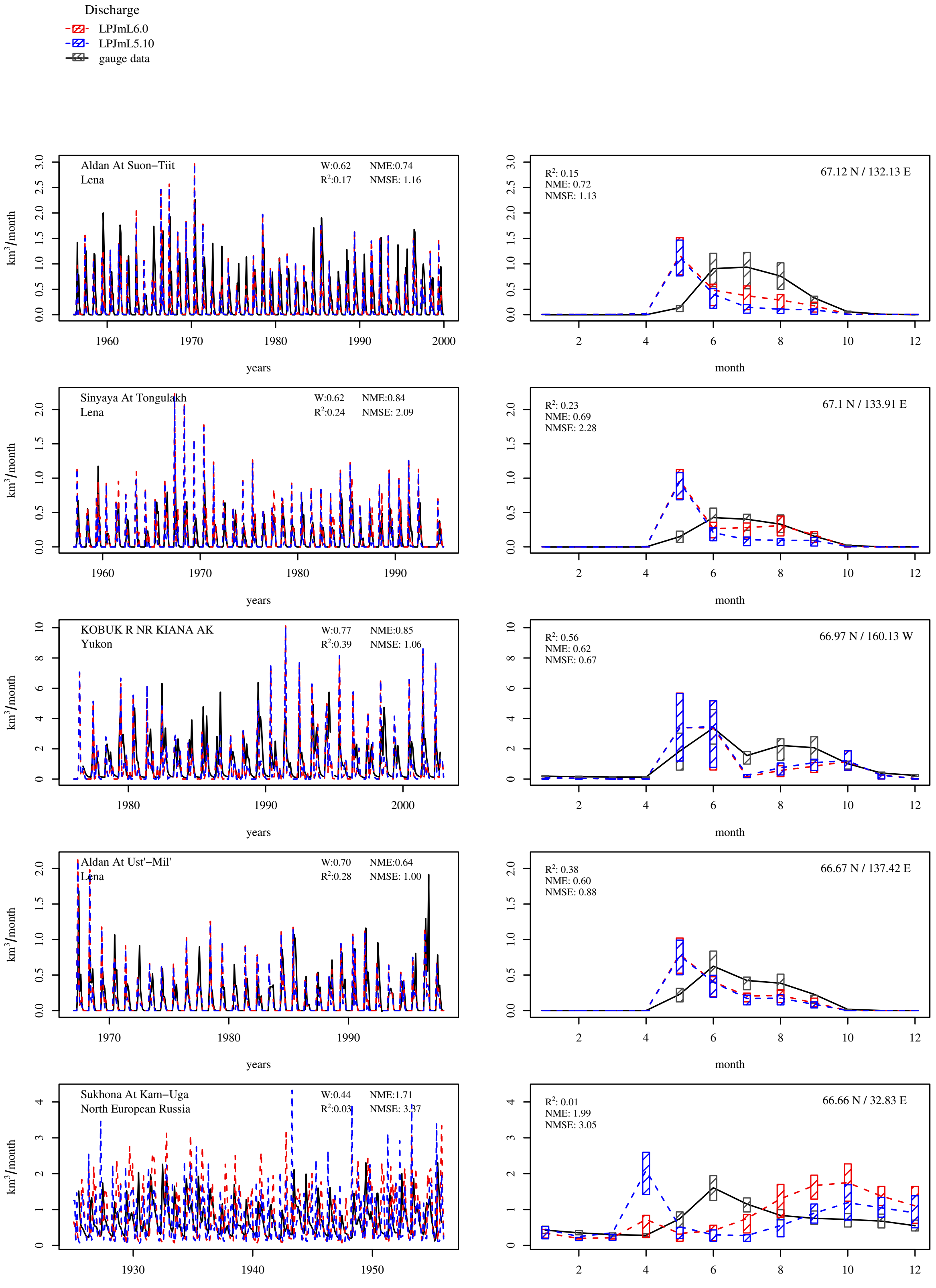
Figure S7. Taylor diagram of nationally aggregated soybean yields as simulated by the GGCMI Phase 1 ensemble (Müller et al., 2017) and LPJmL6. As per unchangeable settings of the GGCMI crop model evaluation tool (Shin et al., 2017; Müller et al., 2017), LPJmL6 is depicted as red circled plus but used different crop management inputs than specified in the GGCMI phase 1 "fullharm" setting that is depicted in red otherwise.

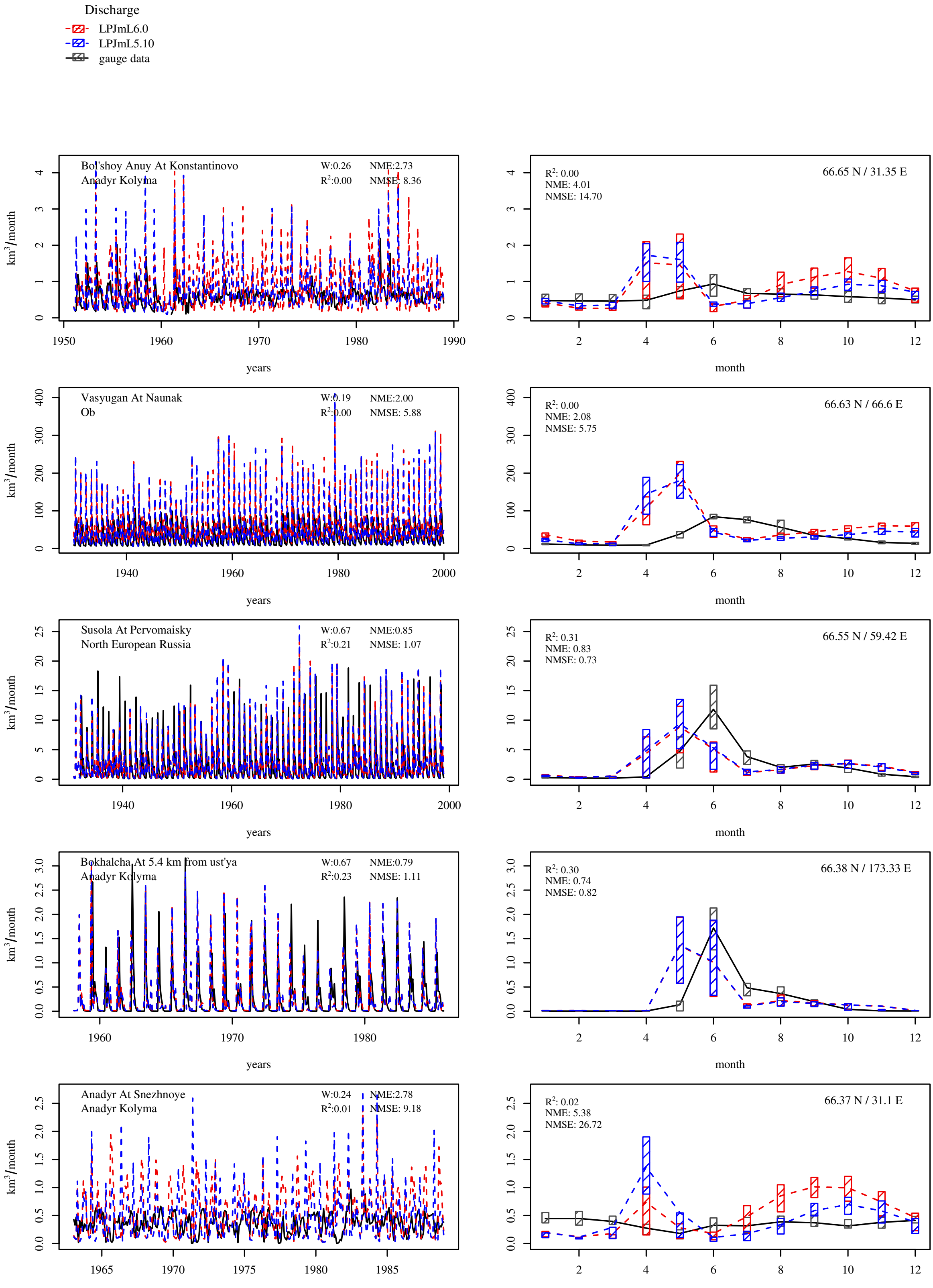

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Allakh−Yun' At Allakh
Lena
W:0.72 NME:0.75
R2:0.25 NMSE: 0.95
R2: 0.27
NME: 0.72
NMSE: 0.90
72.37 N / 126.8 E
Uchur At Chulbu
Lena
W:0.71 NME:0.69
R2:0.27 NMSE: 1.06
R2: 0.42
NME: 0.60
NMSE: 0.64
71.97 N / 114.08 E
Maya At Chabda
Lena
W:0.73 NME:0.69
R2:0.30 NMSE: 0.90
R2: 0.43
NME: 0.65
NMSE: 0.61
71.85 N / 123.65 E
Udoma At Kurung−Targuyak
Lena
W:0.74 NME:0.71
R2:0.31 NMSE: 0.79
R2: 0.34
NME: 0.70
NMSE: 0.73
70.68 N / 127.39 E
Malaya Kuonapka At Dzhalinda
Lena
W:0.80 NME:0.68
R2:0.54 NMSE: 1.17
R2: 0.76
NME: 0.54
NMSE: 0.63
70.13 N / 113.97 E
km3/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Tobol At Yalotorovsk
Ob
W:0.59 NME:0.98
R²:0.11 NMSE: 1.27
R²: 0.16
NME: 0.77
NMSE: 1.07
70.11 N / 28.08 E
Amga At Amga
Lena
W:0.73 NME:0.63
R²:0.31 NMSE: 0.97
R²: 0.32
NME: 0.57
NMSE: 0.87
69.77 N / 135.23 E
Amga At Terut
Lena
W:0.74 NME:0.64
R²:0.31 NMSE: 1.00
R²: 0.39
NME: 0.56
NMSE: 0.71
69.57 N / 147.53 E
Amga At Buyaga
Lena
W:0.55 NME:0.93
R²:0.11 NMSE: 2.15
R²: 0.09
NME: 0.81
NMSE: 2.12
69.38 N / 132.12 E
Severnaya Dvina At Ust'-Pinega
North European Russia
W:0.39 NME:2.15
R²:0.03 NMSE: 3.79
R²: 0.03
NME: 2.41
NMSE: 5.16
68.83 N / 32.66 E
km³/month
years
month

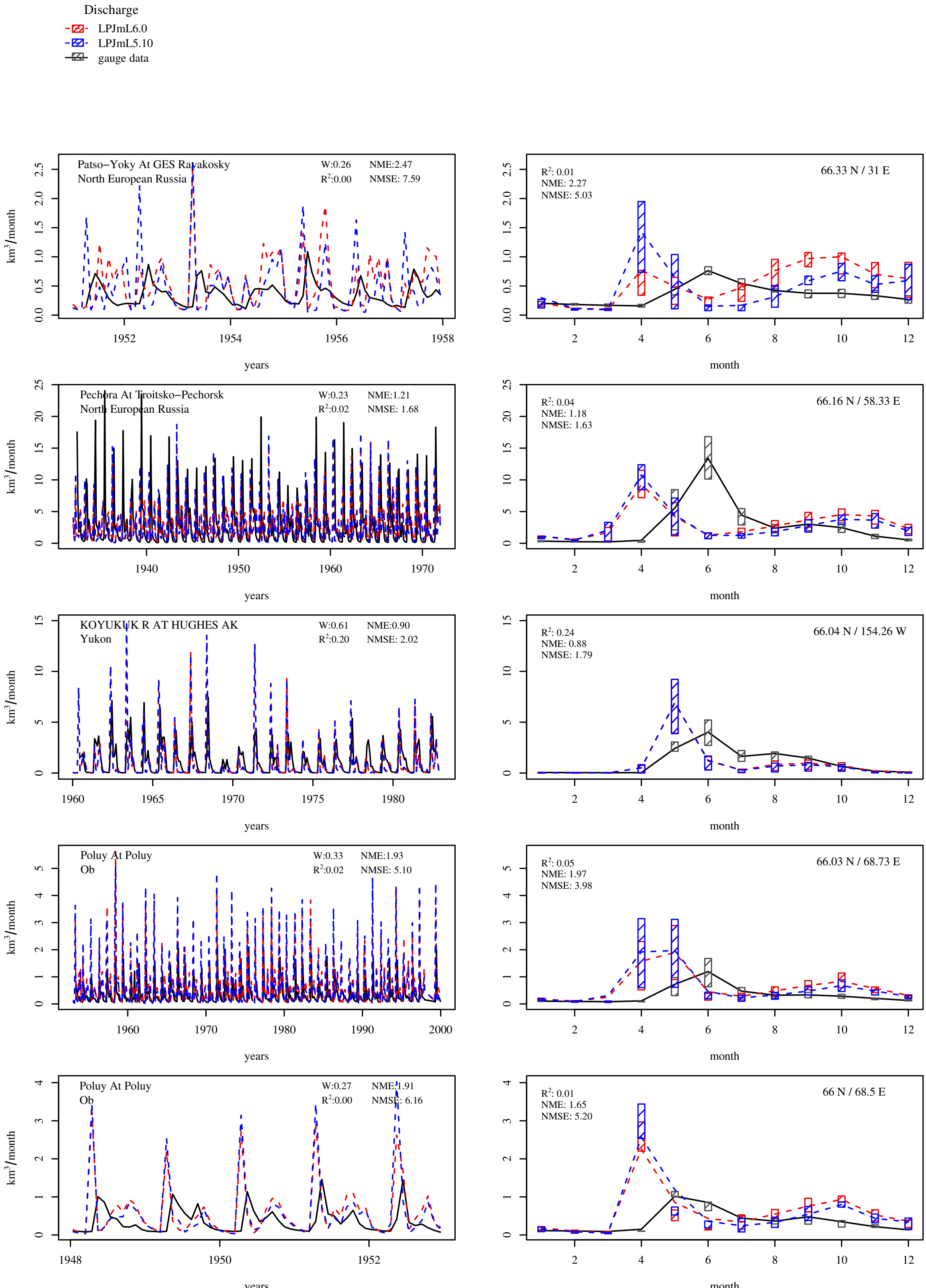

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Kolyma At Ust'−Srednekan
Anadyr Kolyma
W:0.84 NME:0.57
R2:0.52 NMSE: 0.56
R2: 0.52
NME: 0.53
NMSE: 0.55
68.73 N / 158.72 E
Bytantay At Asar
Lena
W:0.65 NME:0.75
R2:0.20 NMSE: 1.38
R2: 0.27
NME: 0.61
NMSE: 1.11
68.62 N / 134.12 E
Namana At Myakinda
Lena
W:0.69 NME:0.73
R2:0.25 NMSE: 1.12
R2: 0.30
NME: 0.73
NMSE: 0.88
68.62 N / 118.33 E
Kolyma At Orotuk
Anadyr Kolyma
W:0.84 NME:0.54
R2:0.55 NMSE: 0.48
R2: 0.65
NME: 0.52
NMSE: 0.39
68.15 N / 161.16 E
Aldan At Tommot
Lena
W:0.70 NME:0.62
R2:0.30 NMSE: 0.80
R2: 0.37
NME: 0.60
NMSE: 0.69
68.02 N / 135.27 E
km3/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Kolyma At Duscania
Anadyr Kolyma
W:0.81 NME:0.63
R²:0.45 NMSE: 0.79
R²: 0.53
NME: 0.54
NMSE: 0.67
67.47 N / 153.69 E
Akhtaranda A 0.5 km nizhe Batur
Lena
W:0.40 NME:1.38
R²:0.01 NMSE: 2.85
R²: 0.02
NME: 1.38
NMSE: 2.55
67.45 N / 133.74 W
Biryusa At Phedino
Yenisei
W:0.43 NME:1.07
R²:0.04 NMSE: 1.38
R²: 0.05
NME: 1.07
NMSE: 1.31
67.43 N / 86.48 E
PORCUPINE RIVER NEAR INTERNATIONAL BOUNDARY
Yukon
NME:0.56
R²:0.45 NMSE: 0.71
R²: 0.60
NME: 0.49
NMSE: 0.49
67.42 N / 140.89 W
Kureika At Ozernaya
Yenisei
W:0.81 NME:0.60
R²:0.52 NMSE: 0.91
R²: 0.63
NME: 0.56
NMSE: 1.03
67.13 N / 156.58 E
km³/month
years
month

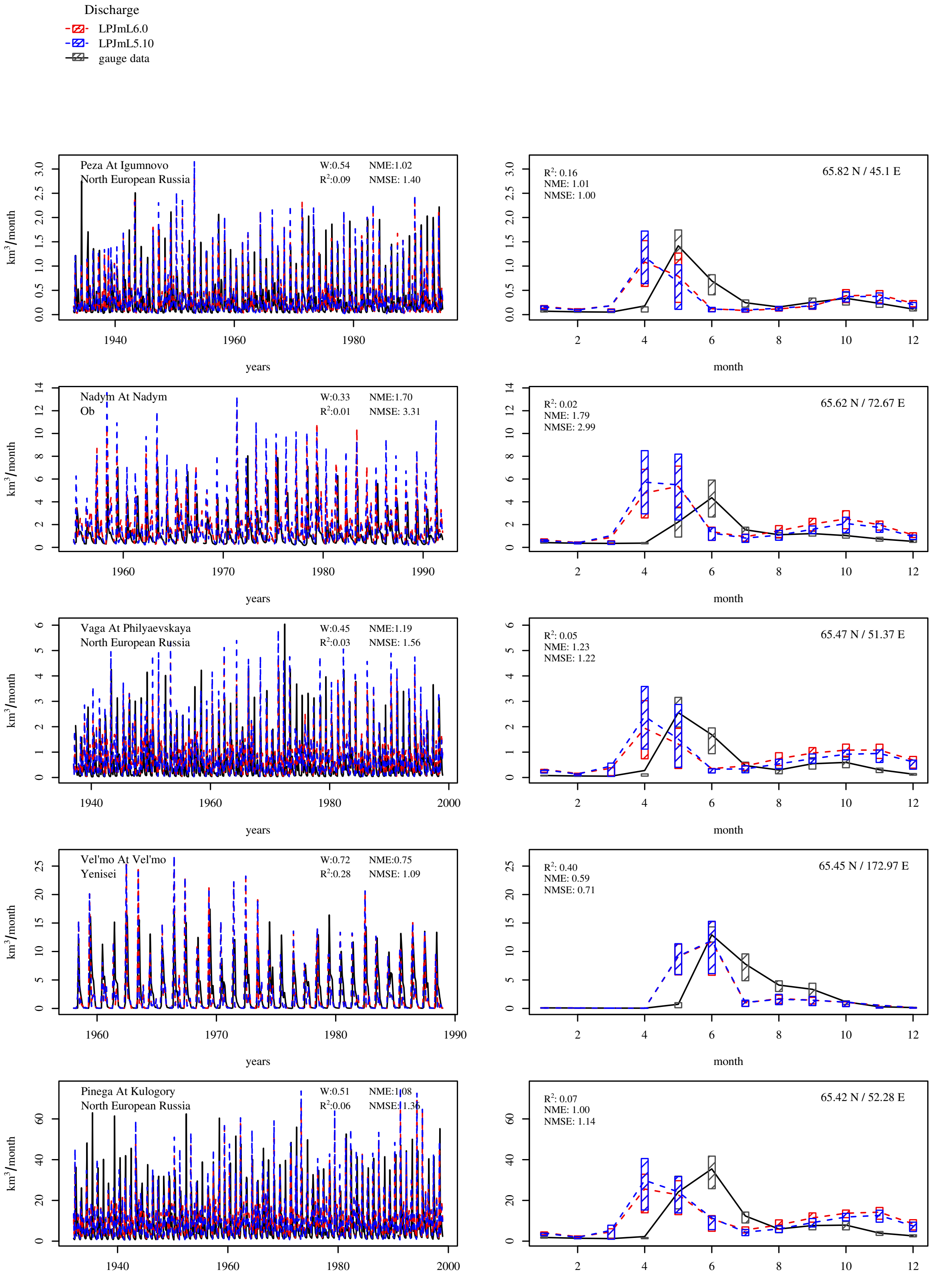

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Aldan At Suon–Tiit
Lena
W:0.62 NME:0.74
R²:0.17 NMSE: 1.16
R²: 0.15
NME: 0.72
NMSE: 1.13
67.12 N / 132.13 E
Sinyaya At Tongulakh
Lena
W:0.62 NME:0.84
R²:0.24 NMSE: 2.09
R²: 0.23
NME: 0.69
NMSE: 2.28
67.1 N / 133.91 E
KOBUK R NR KIANA AK
Yukon
W:0.77 NME:0.85
R²:0.39 NMSE: 1.06
R²: 0.56
NME: 0.62
NMSE: 0.67
66.97 N / 160.13 W
Aldan At Ust'–Mil'
Lena
W:0.70 NME:0.64
R²:0.28 NMSE: 1.00
R²: 0.38
NME: 0.60
NMSE: 0.88
66.67 N / 137.42 E
Sukhona At Kam–Uga
North European Russia
W:0.44 NME:1.71
R²:0.03 NMSE: 3.37
R²: 0.01
NME: 1.99
NMSE: 3.05
66.66 N / 32.83 E
km³/month
years
month

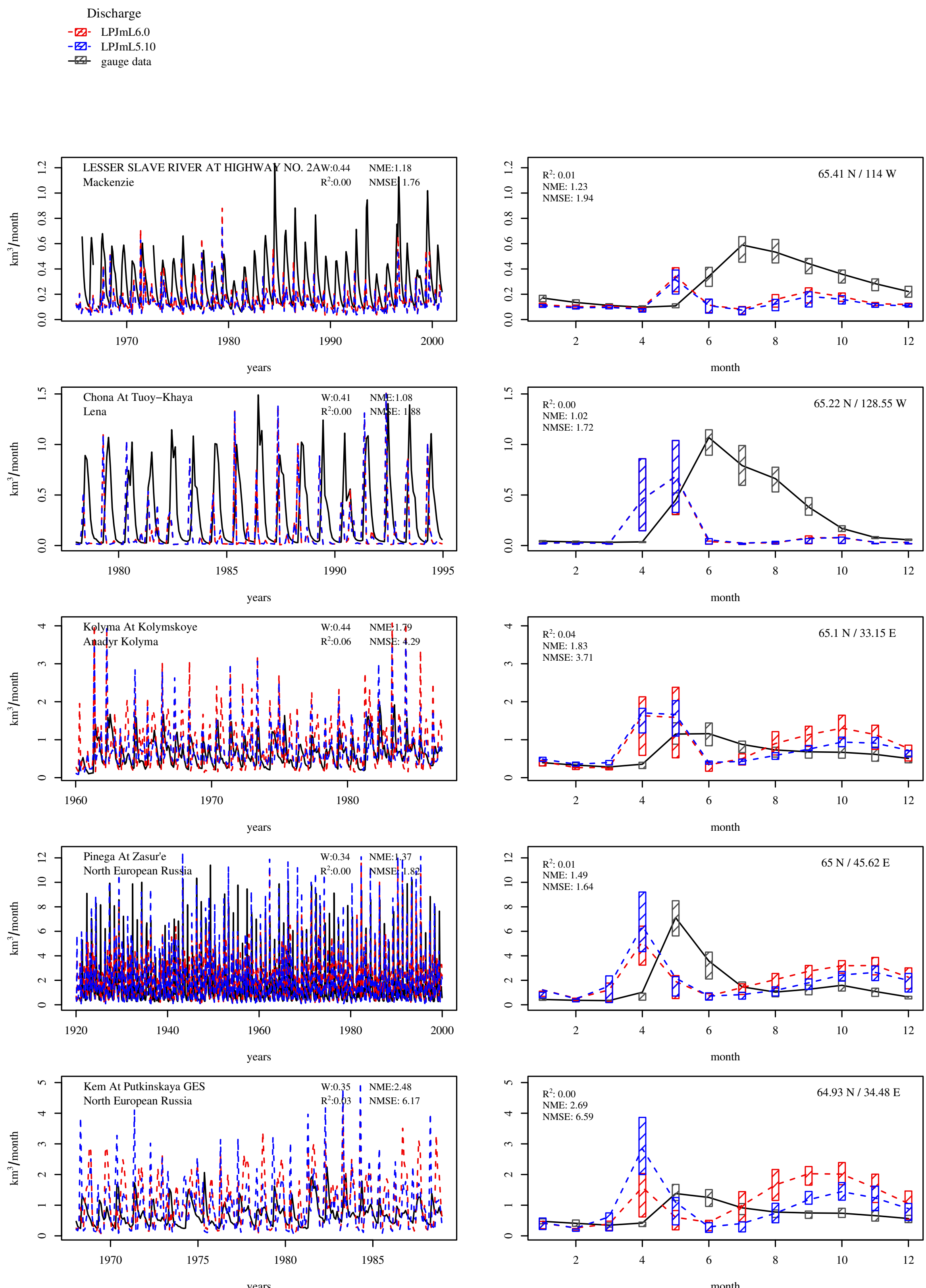

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Bol'shoy Anuy At Konstantinovo
Anadyr Kolyma
W:0.26 NME:2.73
R²:0.00 NMSE: 8.36
R²: 0.00
NME: 4.01
NMSE: 14.70
66.65 N / 31.35 E
Vasyugan At Naunak
Ob
W:0.19 NME:2.00
R²:0.00 NMSE: 5.88
R²: 0.00
NME: 2.08
NMSE: 5.75
66.63 N / 66.6 E
Susola At Pervomaisky
North European Russia
W:0.67 NME:0.85
R²:0.21 NMSE: 1.07
R²: 0.31
NME: 0.83
NMSE: 0.73
66.55 N / 59.42 E
Bokhalcha At 5.4 km from ust'ya
Anadyr Kolyma
W:0.67 NME:0.79
R²:0.23 NMSE: 1.11
R²: 0.30
NME: 0.74
NMSE: 0.82
66.38 N / 173.33 E
Anadyr At Snezhnoye
Anadyr Kolyma
W:0.24 NME:2.78
R²:0.01 NMSE: 9.18
R²: 0.02
NME: 5.38
NMSE: 26.72
66.37 N / 31.1 E
km³/month
years
month

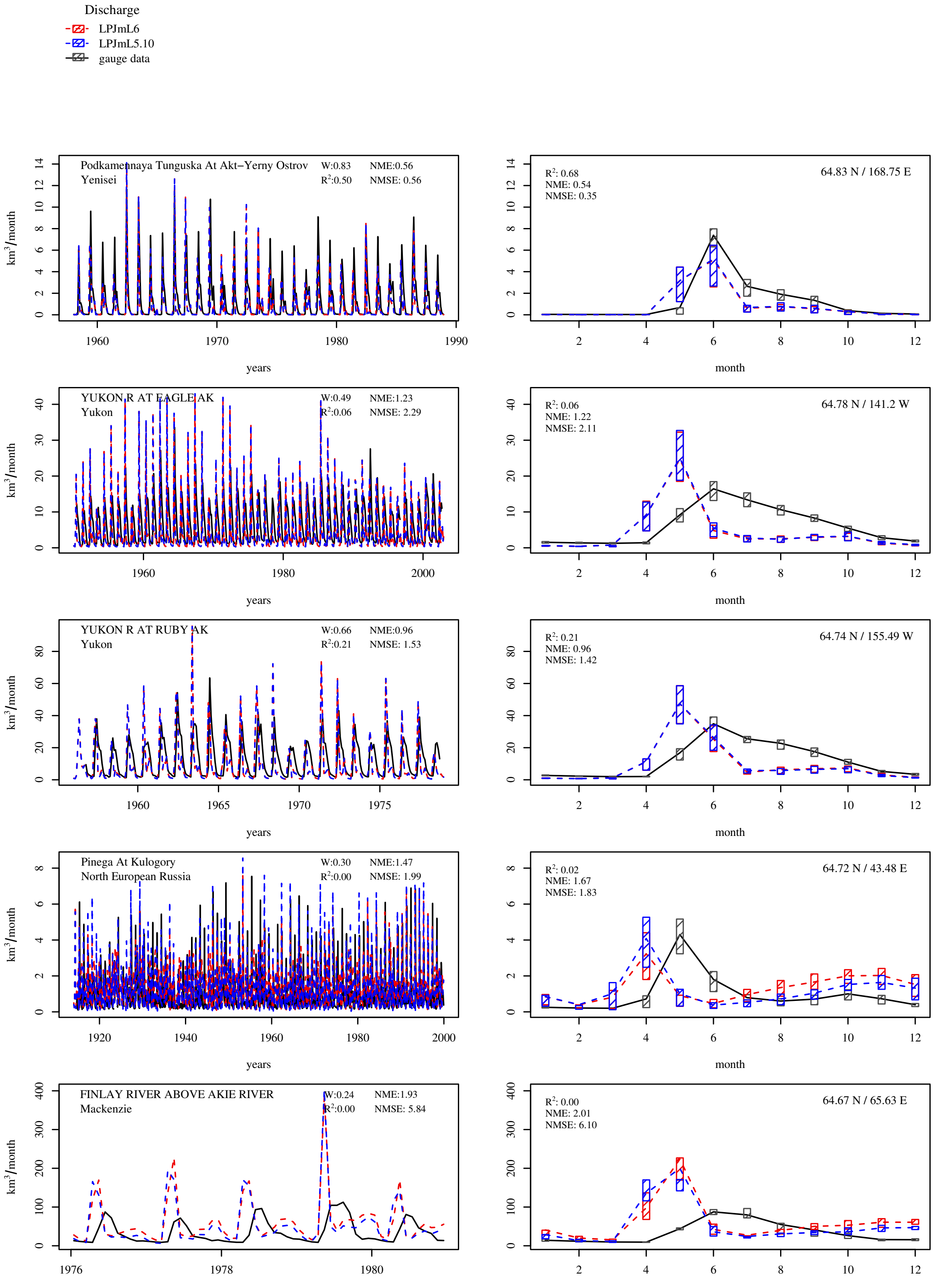
30

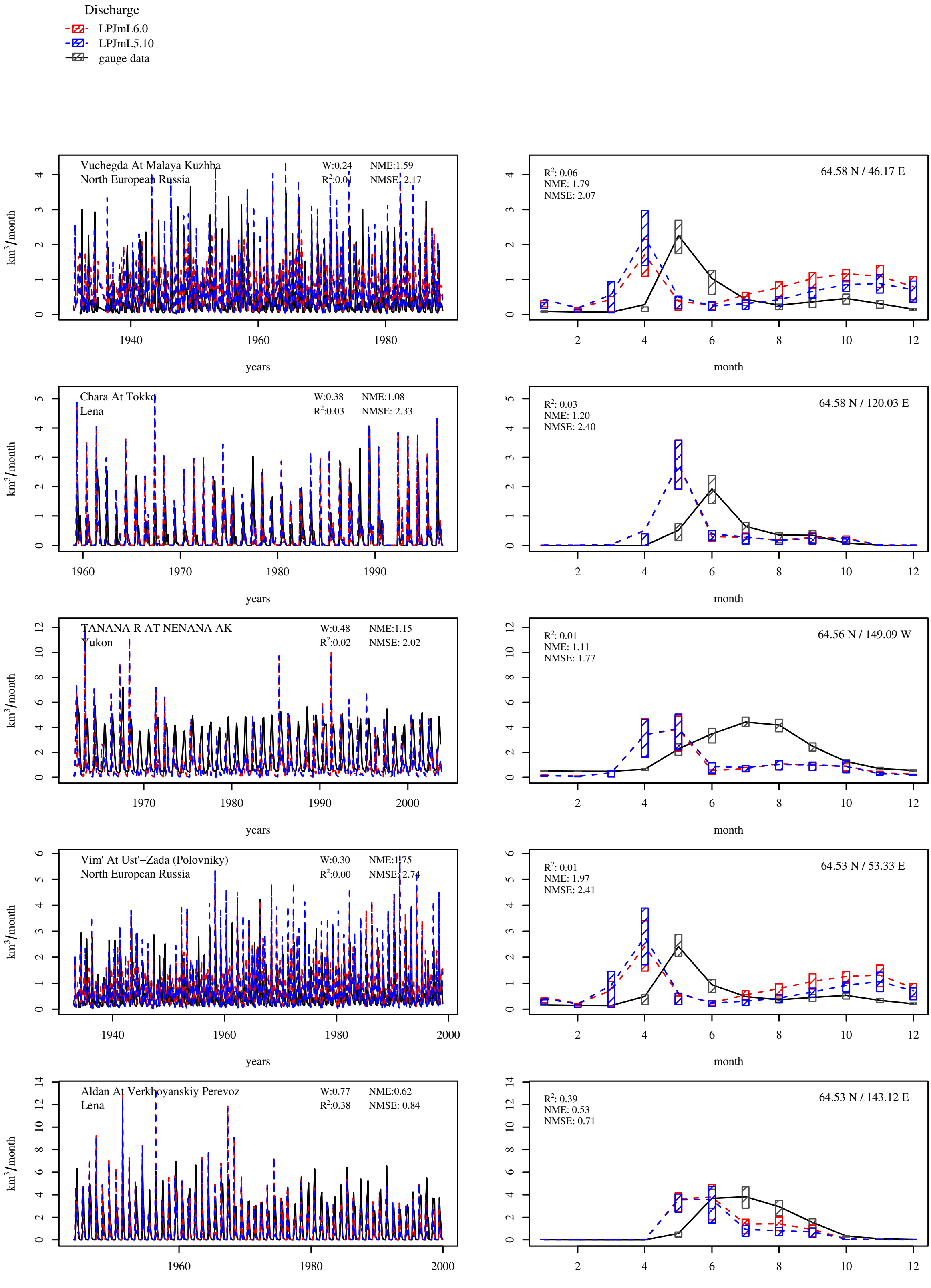


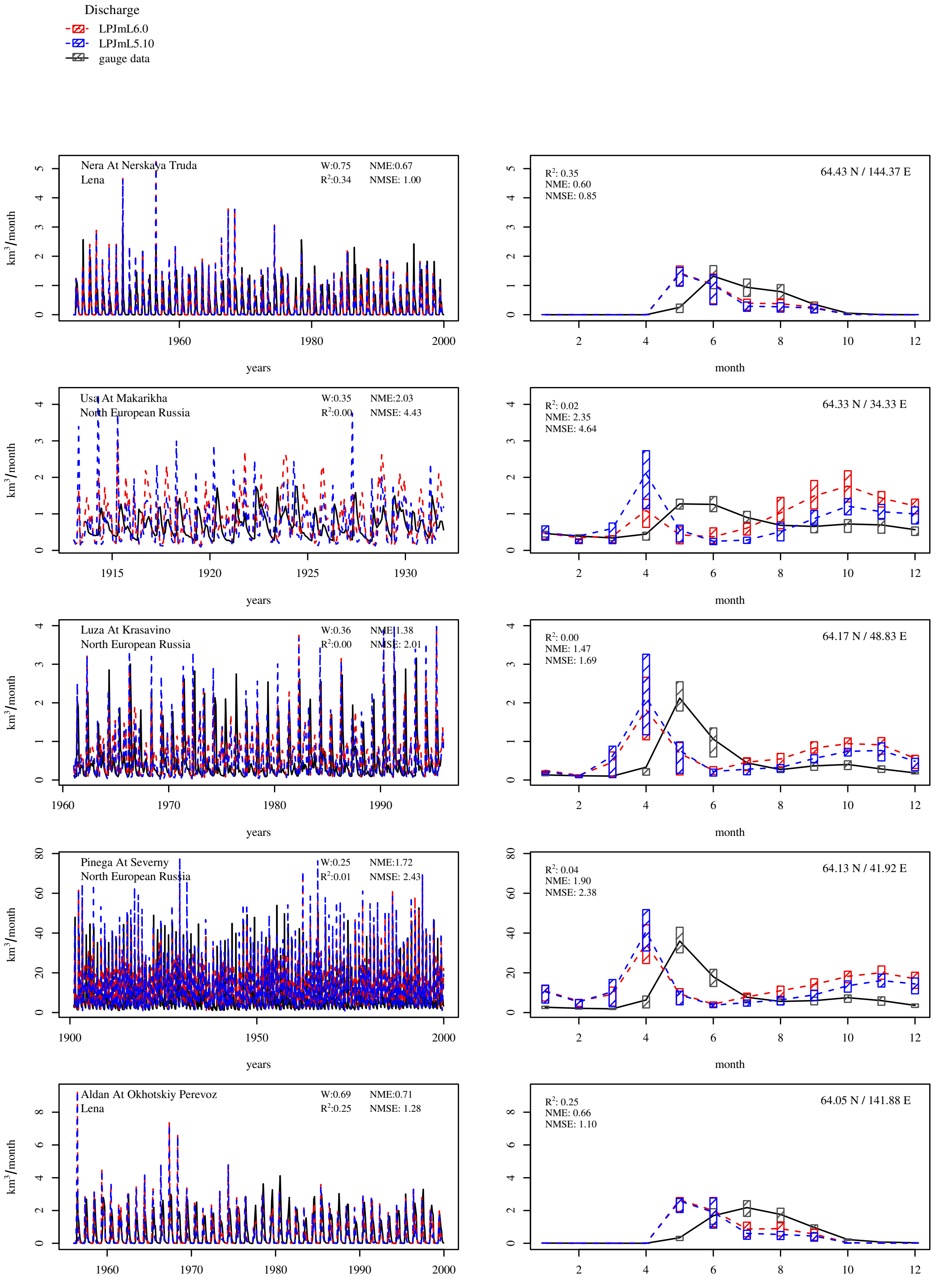
Discharge
LPJmL6.0
LPJmL5.10
gauge data
Patso−Yoky At GES Rayakosky
North European Russia
W:0.26 NME:2.47
R²:0.00 NMSE: 7.59
R²: 0.01
NME: 2.27
NMSE: 5.03
66.33 N / 31 E
Pechora At Troitsko−Pechorsk
North European Russia
W:0.23 NME:1.21
R²:0.02 NMSE: 1.68
R²: 0.04
NME: 1.18
NMSE: 1.63
66.16 N / 58.33 E
KOYUKUK R AT HUGHES AK
Yukon
W:0.61 NME:0.90
R²:0.20 NMSE: 2.02
R²: 0.24
NME: 0.88
NMSE: 1.79
66.04 N / 154.26 W
Poluy At Poluy
Ob
W:0.33 NME:1.93
R²:0.02 NMSE: 5.10
R²: 0.05
NME: 1.97
NMSE: 3.98
66.03 N / 68.73 E
Poluy At Poluy
Ob
W:0.27 NME:1.91
R²:0.00 NMSE: 6.16
R²: 0.01
NME: 1.65
NMSE: 5.20
66 N / 68.5 E
km³/month
years
month

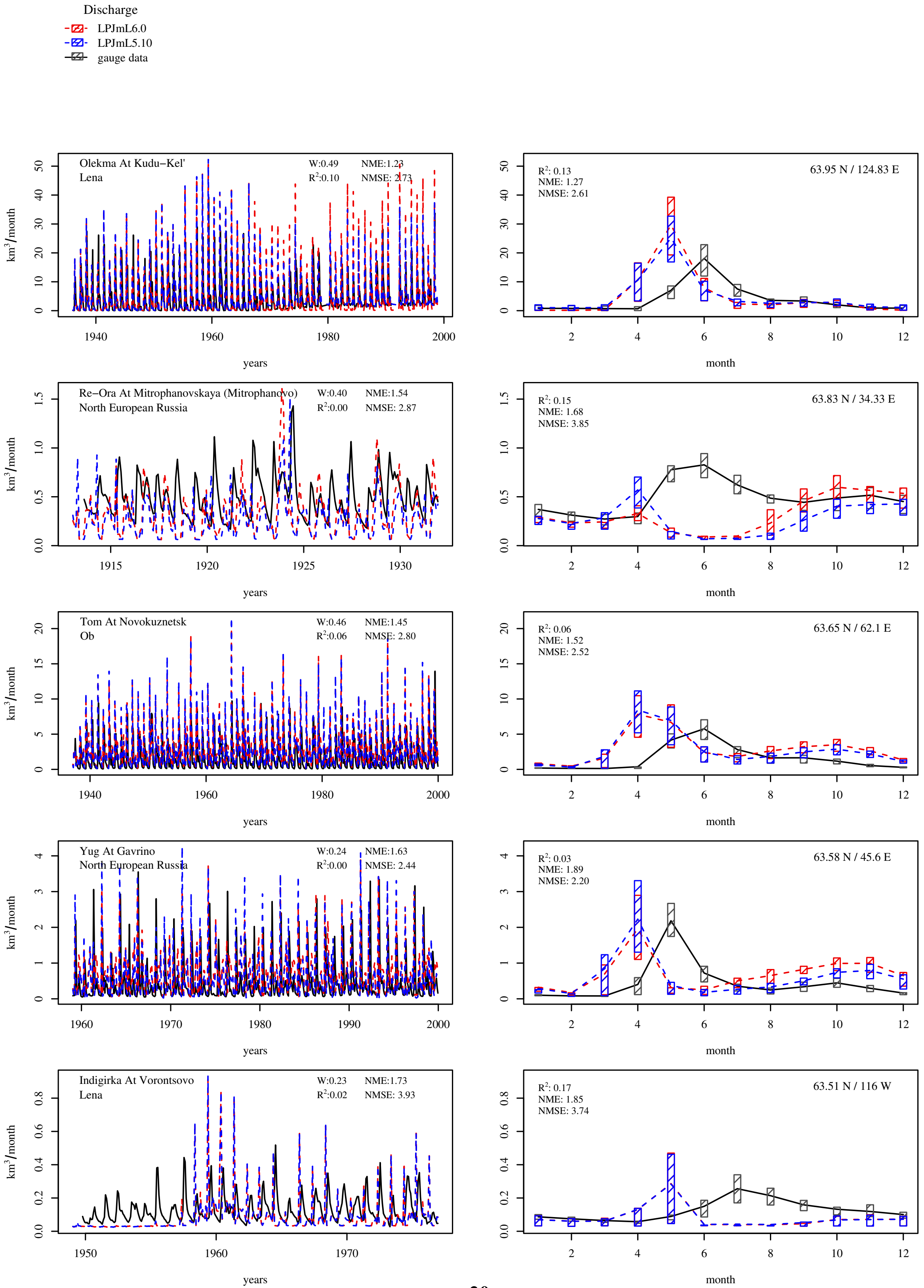

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Peza At Igumnovo
North European Russia
W:0.54 NME:1.02
R^2:0.09 NMSE: 1.40
R^2: 0.16
NME: 1.01
NMSE: 1.00
65.82 N / 45.1 E
Nadym At Nadym
Ob
W:0.33 NME:1.70
R^2:0.01 NMSE: 3.31
R^2: 0.02
NME: 1.79
NMSE: 2.99
65.62 N / 72.67 E
Vaga At Philyaevskaya
North European Russia
W:0.45 NME:1.19
R^2:0.03 NMSE: 1.56
R^2: 0.05
NME: 1.23
NMSE: 1.22
65.47 N / 51.37 E
Vel'mo At Vel'mo
Yenisei
W:0.72 NME:0.75
R^2:0.28 NMSE: 1.09
R^2: 0.40
NME: 0.59
NMSE: 0.71
65.45 N / 172.97 E
Pinega At Kulogory
North European Russia
W:0.51 NME:1.08
R^2:0.06 NMSE: 1.36
R^2: 0.07
NME: 1.00
NMSE: 1.14
65.42 N / 52.28 E
km^3/month
years
month

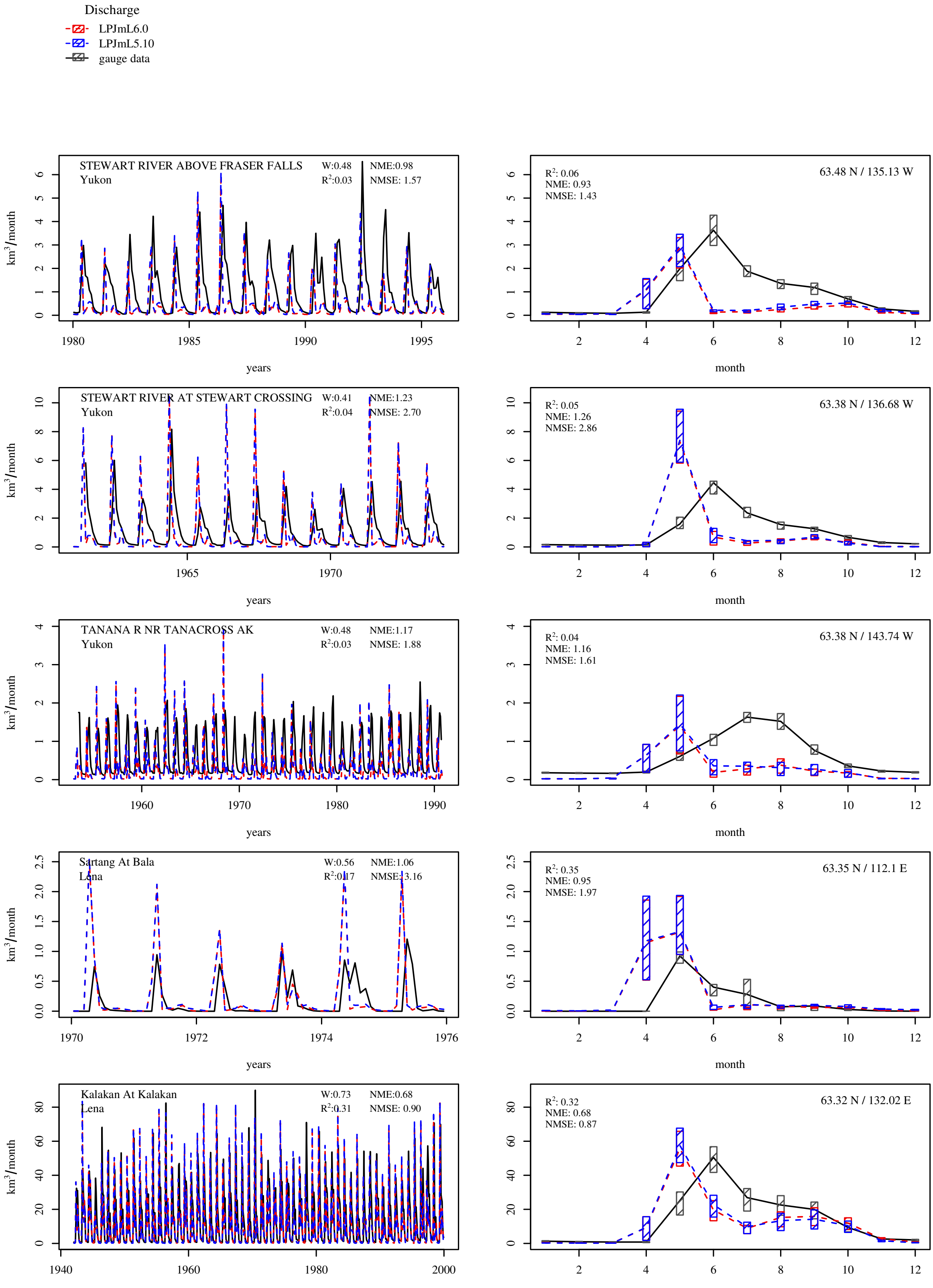

Discharge
LPJmL6.0
LPJmL5.10
gauge data
LESSER SLAVE RIVER AT HIGHWAY NO. 2A
Mackenzie
W:0.44 NME:1.18
R²:0.00 NMSE: 1.76
R²: 0.01
NME: 1.23
NMSE: 1.94
65.41 N / 114 W
Chona At Tuoy−Khaya
Lena
W:0.41 NME:1.08
R²:0.00 NMSE: 1.88
R²: 0.00
NME: 1.02
NMSE: 1.72
65.22 N / 128.55 W
Kolyma At Kolymskoye
Anadyr Kolyma
W:0.44 NME:1.79
R²:0.06 NMSE: 4.29
R²: 0.04
NME: 1.83
NMSE: 3.71
65.1 N / 33.15 E
Pinega At Zasur'e
North European Russia
W:0.34 NME:1.37
R²:0.00 NMSE: 1.82
R²: 0.01
NME: 1.49
NMSE: 1.64
65 N / 45.62 E
Kem At Putkinskaya GES
North European Russia
W:0.35 NME:2.48
R²:0.03 NMSE: 6.17
R²: 0.00
NME: 2.69
NMSE: 6.59
64.93 N / 34.48 E
km³/month
years
month

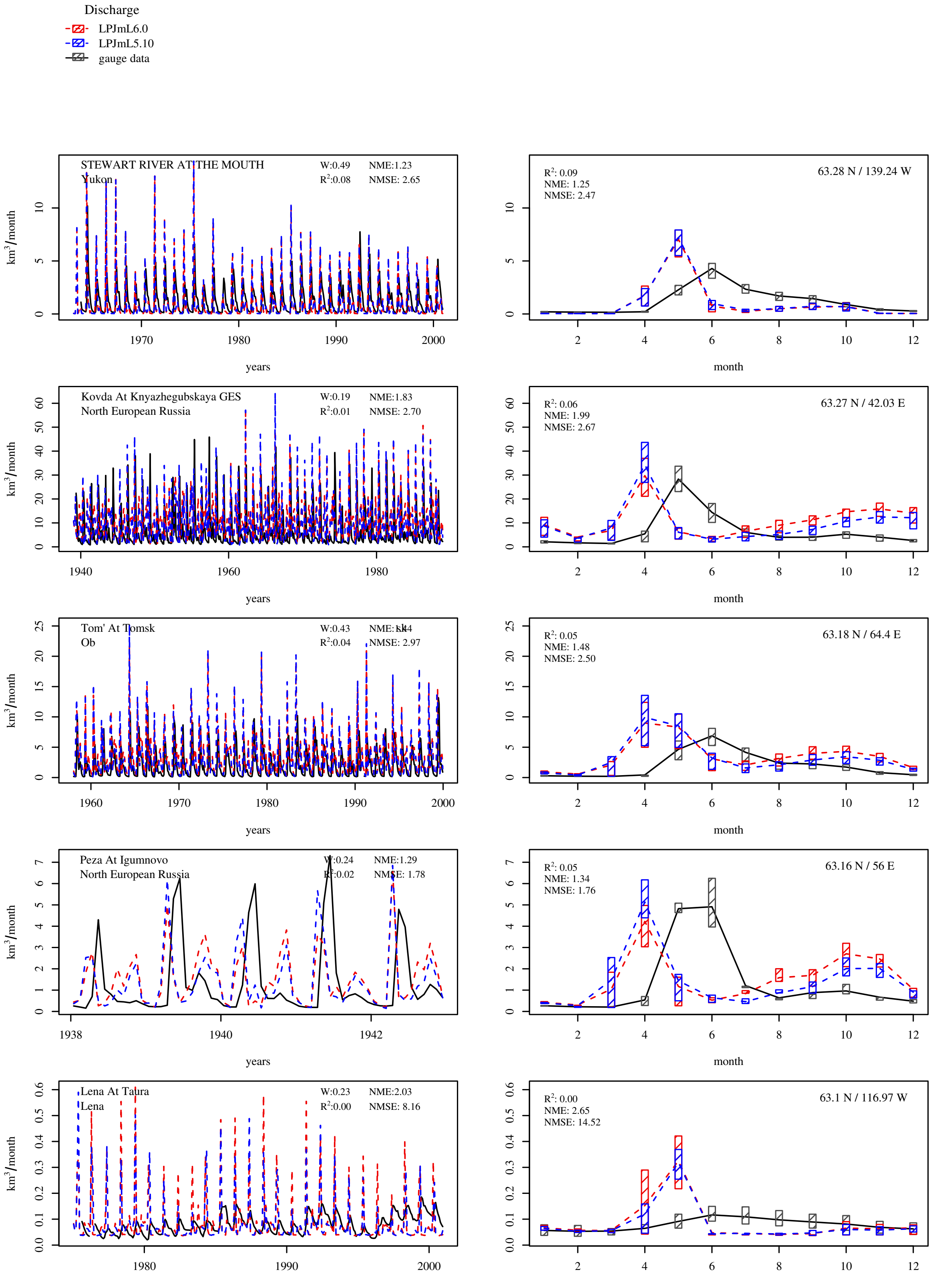

Discharge
LPJmL6
LPJmL5.10
gauge data
Podkamennaya Tunguska At Akt−Yerny Ostrov
Yenisei
W:0.83
NME:0.56
R2:0.50
NMSE: 0.56
R2: 0.68
NME: 0.54
NMSE: 0.35
64.83 N / 168.75 E
YUKON R AT EAGLE AK
Yukon
W:0.49
NME:1.23
R2:0.06
NMSE: 2.29
R2: 0.06
NME: 1.22
NMSE: 2.11
64.78 N / 141.2 W
YUKON R AT RUBY AK
Yukon
W:0.66
NME:0.96
R2:0.21
NMSE: 1.53
R2: 0.21
NME: 0.96
NMSE: 1.42
64.74 N / 155.49 W
Pinega At Kulogory
North European Russia
W:0.30
NME:1.47
R2:0.00
NMSE: 1.99
R2: 0.02
NME: 1.67
NMSE: 1.83
64.72 N / 43.48 E
FINLAY RIVER ABOVE AKIE RIVER
Mackenzie
W:0.24
NME:1.93
R2:0.00
NMSE: 5.84
R2: 0.00
NME: 2.01
NMSE: 6.10
64.67 N / 65.63 E
km3/month
years
month

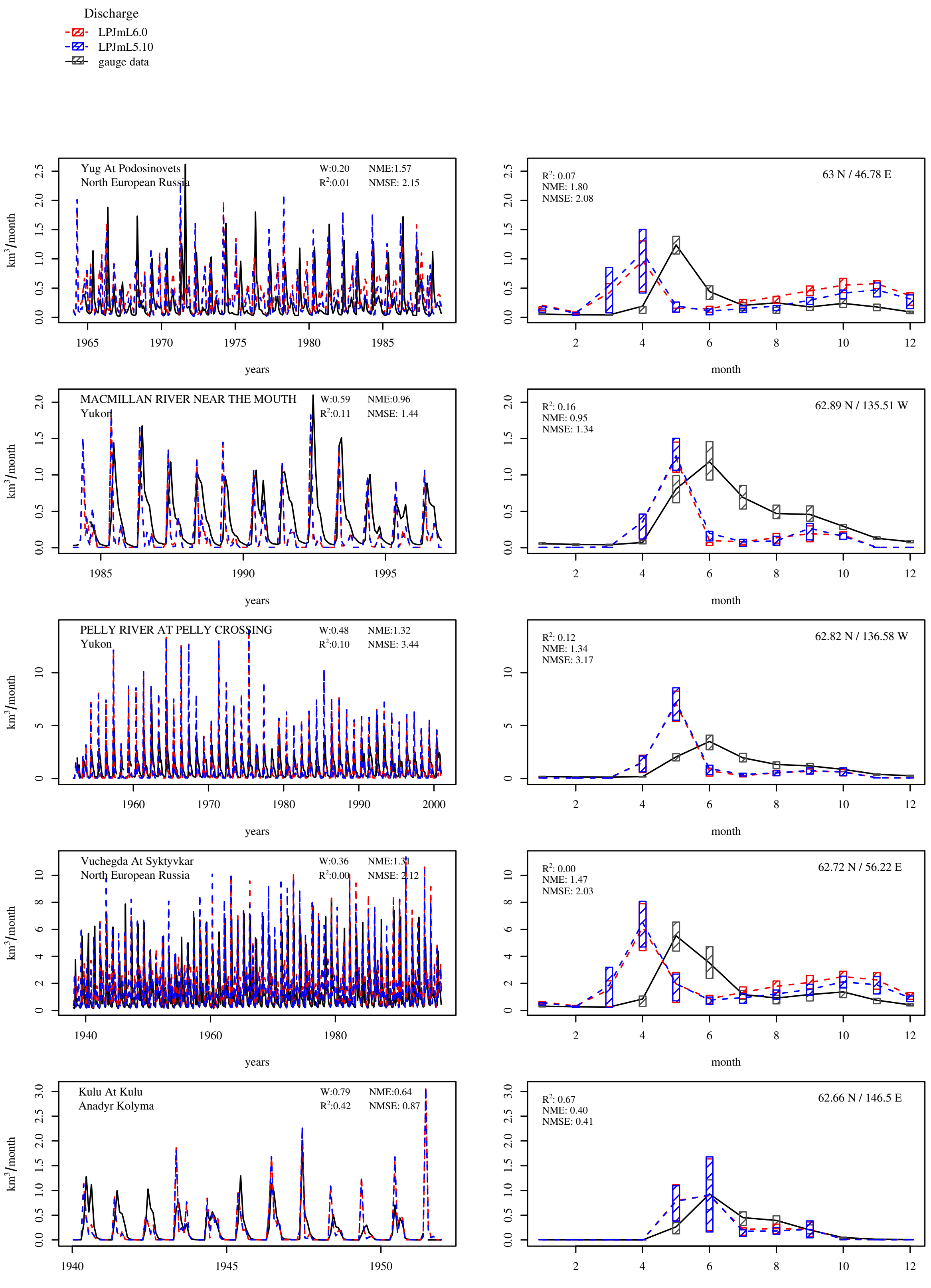

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Vuchegda At Malaya Kuzhba
North European Russia
W:0.24 NME:1.59
R2:0.01 NMSE: 2.17
R2: 0.06
NME: 1.79
NMSE: 2.07
64.58 N / 46.17 E
Chara At Tokko
Lena
W:0.38 NME:1.08
R2:0.03 NMSE: 2.33
R2: 0.03
NME: 1.20
NMSE: 2.40
64.58 N / 120.03 E
TANANA R AT NENANA AK
Yukon
W:0.48 NME:1.15
R2:0.02 NMSE: 2.02
R2: 0.01
NME: 1.11
NMSE: 1.77
64.56 N / 149.09 W
Vim' At Ust'–Zada (Polovniky)
North European Russia
W:0.30 NME:1.75
R2:0.00 NMSE: 2.74
R2: 0.01
NME: 1.97
NMSE: 2.41
64.53 N / 53.33 E
Aldan At Verkhoyanskiy Perevoz
Lena
W:0.77 NME:0.62
R2:0.38 NMSE: 0.84
R2: 0.39
NME: 0.53
NMSE: 0.71
64.53 N / 143.12 E
km3/month
years
month

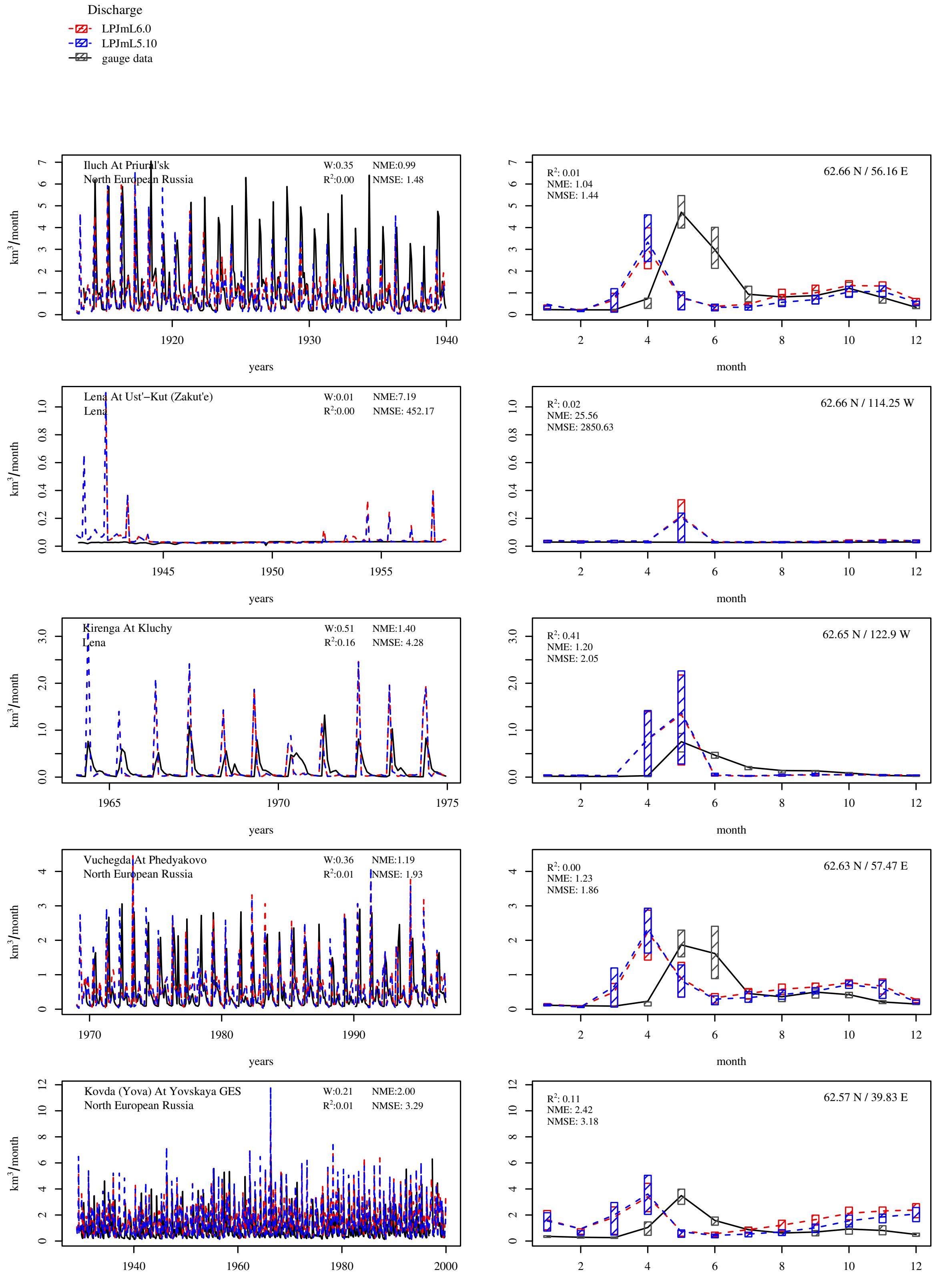

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Nera At Nerskaya Truda
Lena
W:0.75
NME:0.67
R²:0.34
NMSE: 1.00
R²: 0.35
NME: 0.60
NMSE: 0.85
64.43 N / 144.37 E
Usa At Makarikha
North European Russia
W:0.35
NME:2.03
R²:0.00
NMSE: 4.43
R²: 0.02
NME: 2.35
NMSE: 4.64
64.33 N / 34.33 E
Luza At Krasavino
North European Russia
W:0.36
NME:1.38
R²:0.00
NMSE: 2.01
R²: 0.00
NME: 1.47
NMSE: 1.69
64.17 N / 48.83 E
Pinega At Severny
North European Russia
W:0.25
NME:1.72
R²:0.01
NMSE: 2.43
R²: 0.04
NME: 1.90
NMSE: 2.38
64.13 N / 41.92 E
Aldan At Okhotskiy Perevoz
Lena
W:0.69
NME:0.71
R²:0.25
NMSE: 1.28
R²: 0.25
NME: 0.66
NMSE: 1.10
64.05 N / 141.88 E
km³/month
years
month

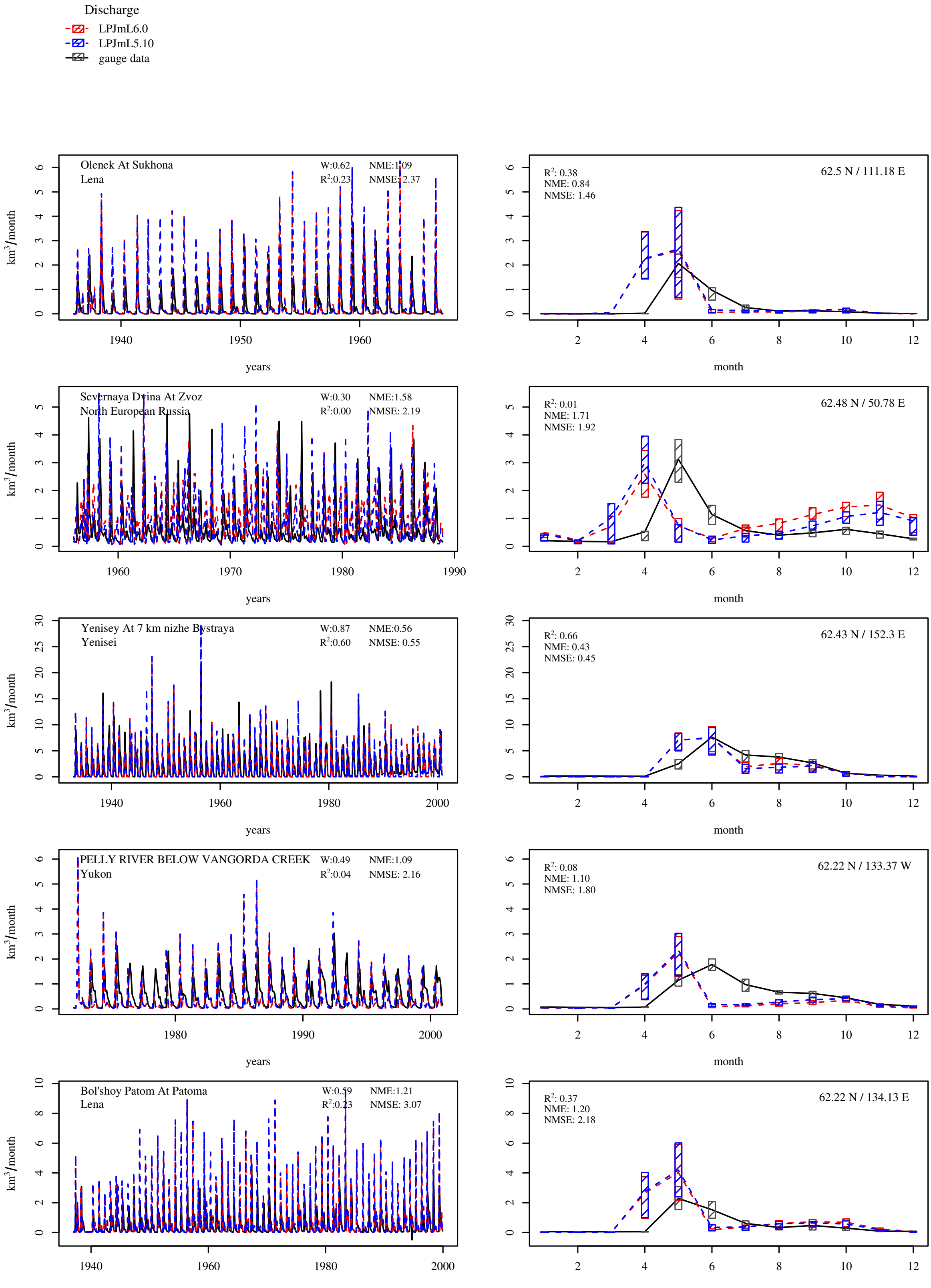

Discharge
LPJmL6.0
LPJmL5.10
gauge data
km³/month
years
month
Olekma At Kudu−Kel'
Lena
W:0.49
NME:1.23
R²:0.10
NMSE: 2.73
R²: 0.13
NME: 1.27
NMSE: 2.61
63.95 N / 124.83 E
Re−Ora At Mitrophanovskaya (Mitrophanovo)
North European Russia
W:0.40
NME:1.54
R²:0.00
NMSE: 2.87
R²: 0.15
NME: 1.68
NMSE: 3.85
63.83 N / 34.33 E
Tom At Novokuznetsk
Ob
W:0.46
NME:1.45
R²:0.06
NMSE: 2.80
R²: 0.06
NME: 1.52
NMSE: 2.52
63.65 N / 62.1 E
Yug At Gavrino
North European Russia
W:0.24
NME:1.63
R²:0.00
NMSE: 2.44
R²: 0.03
NME: 1.89
NMSE: 2.20
63.58 N / 45.6 E
Indigirka At Vorontsovo
Lena
W:0.23
NME:1.73
R²:0.02
NMSE: 3.93
R²: 0.17
NME: 1.85
NMSE: 3.74
63.51 N / 116 W

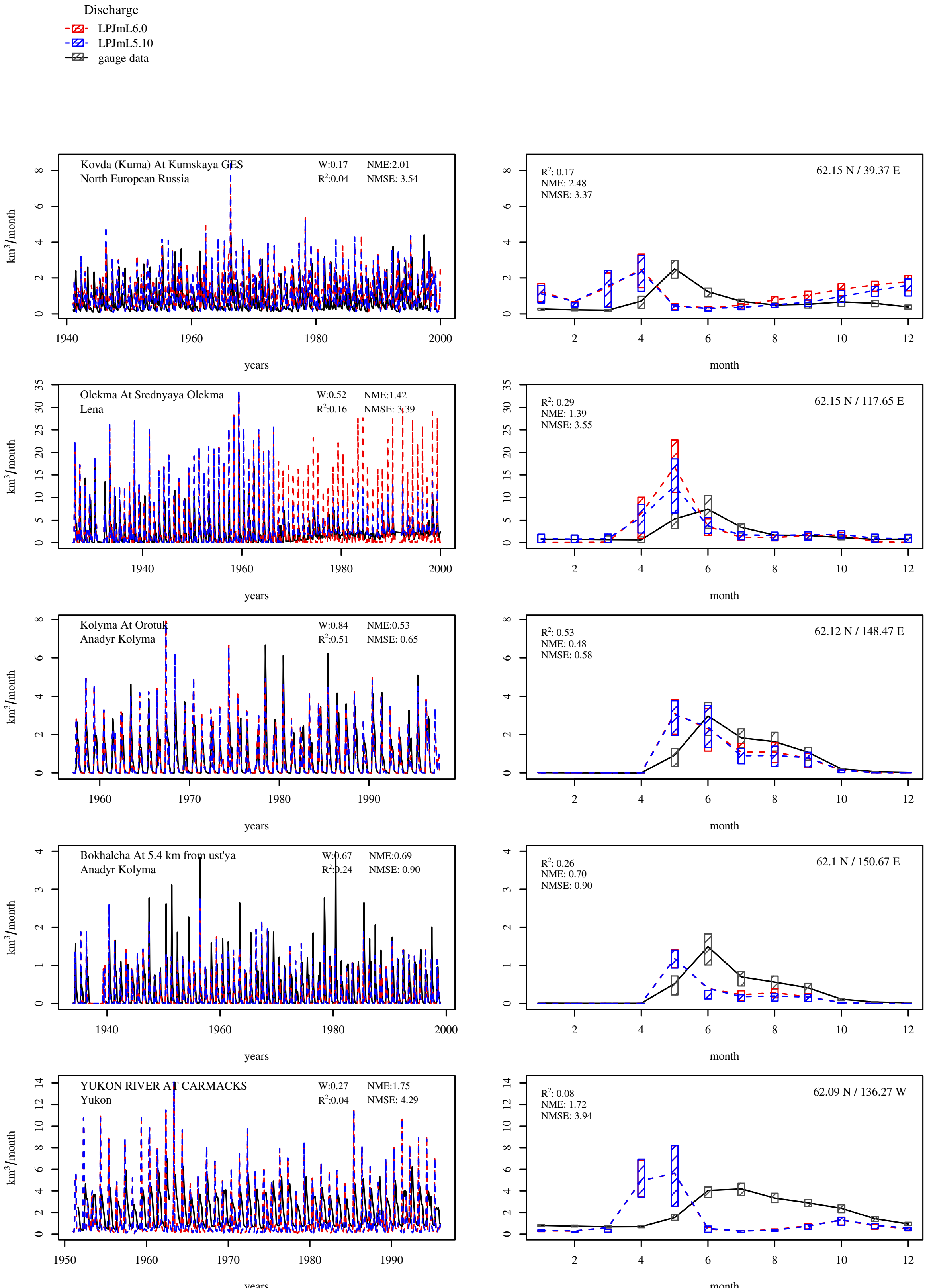

Discharge
LPJmL6.0
LPJmL5.10
gauge data
STEWART RIVER ABOVE FRASER FALLS
Yukon
W:0.48
R2:0.03
NME:0.98
NMSE: 1.57
R2: 0.06
NME: 0.93
NMSE: 1.43
63.48 N / 135.13 W
STEWART RIVER AT STEWART CROSSING
Yukon
W:0.41
R2:0.04
NME:1.23
NMSE: 2.70
R2: 0.05
NME: 1.26
NMSE: 2.86
63.38 N / 136.68 W
TANANA R NR TANACROSS AK
Yukon
W:0.48
R2:0.03
NME:1.17
NMSE: 1.88
R2: 0.04
NME: 1.16
NMSE: 1.61
63.38 N / 143.74 W
Sartang At Bala
Lena
W:0.56
R2:0.17
NME:1.06
NMSE: 3.16
R2: 0.35
NME: 0.95
NMSE: 1.97
63.35 N / 112.1 E
Kalakan At Kalakan
Lena
W:0.73
R2:0.31
NME:0.68
NMSE: 0.90
R2: 0.32
NME: 0.68
NMSE: 0.87
63.32 N / 132.02 E
km3/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
STEWART RIVER AT THE MOUTH
Yukon
W:0.49 NME:1.23
R²:0.08 NMSE: 2.65
R²: 0.09
NME: 1.25
NMSE: 2.47
63.28 N / 139.24 W
Kovda At Knyazhegubskaya GES
North European Russia
W:0.19 NME:1.83
R²:0.01 NMSE: 2.70
R²: 0.06
NME: 1.99
NMSE: 2.67
63.27 N / 42.03 E
Tom' At Tomsk
Ob
W:0.43
R²:0.04 NMSE: 2.97
R²: 0.05
NME: 1.48
NMSE: 2.50
63.18 N / 64.4 E
Peza At Igumnovo
North European Russia
W:0.24 NME:1.29
R²:0.02 NMSE: 1.78
R²: 0.05
NME: 1.34
NMSE: 1.76
63.16 N / 56 E
Lena At Tabra
Lena
W:0.23 NME:2.03
R²:0.00 NMSE: 8.16
R²: 0.00
NME: 2.65
NMSE: 14.52
63.1 N / 116.97 W
km³/month
years
month

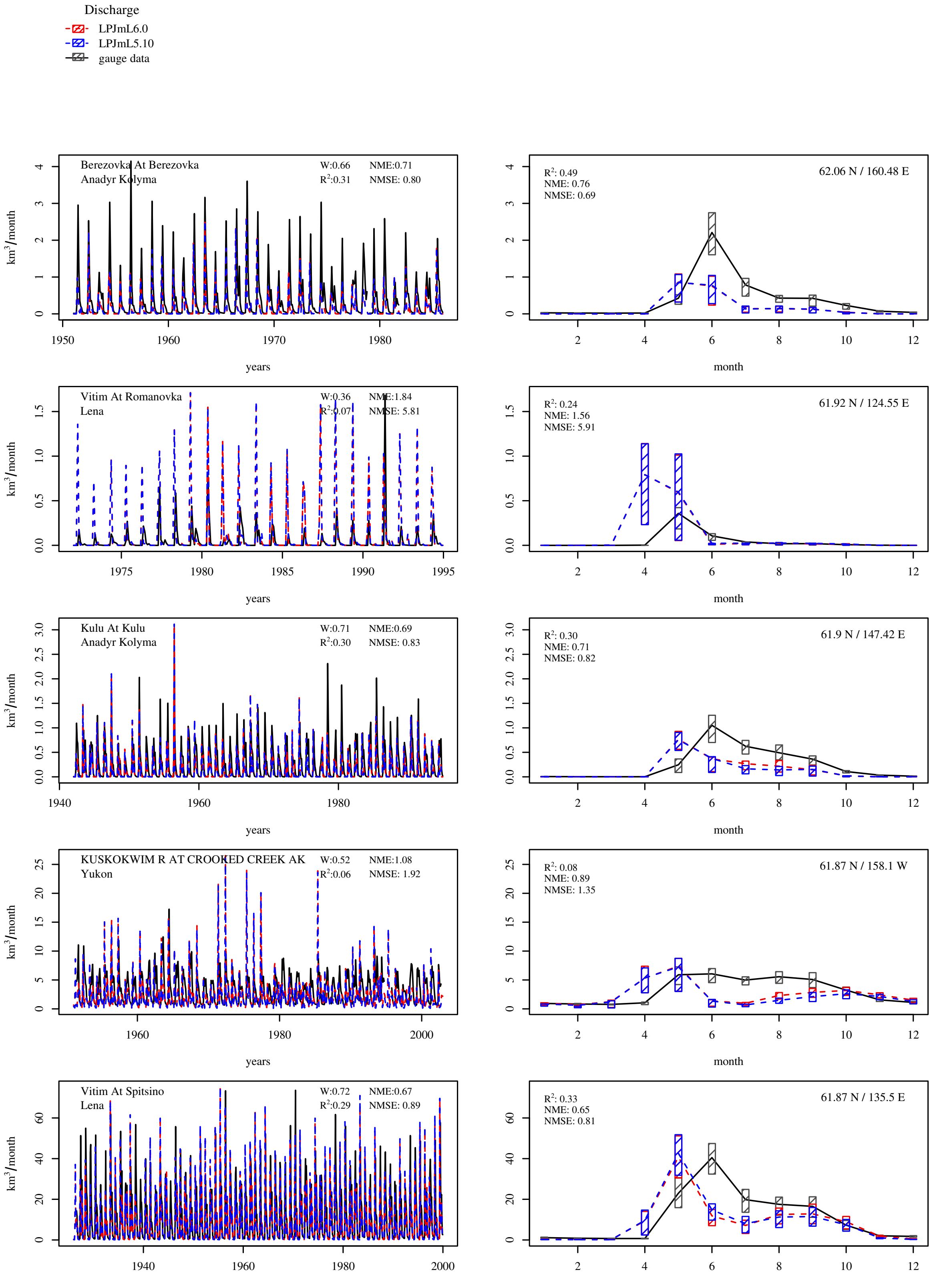

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Yug At Podosinovets
North European Russia
W:0.20 NME:1.57
R^2:0.01 NMSE: 2.15
R^2: 0.07
NME: 1.80
NMSE: 2.08
63 N / 46.78 E
MACMILLAN RIVER NEAR THE MOUTH
Yukon
W:0.59 NME:0.96
R^2:0.11 NMSE: 1.44
R^2: 0.16
NME: 0.95
NMSE: 1.34
62.89 N / 135.51 W
PELLY RIVER AT PELLY CROSSING
Yukon
W:0.48 NME:1.32
R^2:0.10 NMSE: 3.44
R^2: 0.12
NME: 1.34
NMSE: 3.17
62.82 N / 136.58 W
Vuchegda At Syktyvkar
North European Russia
W:0.36 NME:1.31
R^2:0.00 NMSE: 2.12
R^2: 0.00
NME: 1.47
NMSE: 2.03
62.72 N / 56.22 E
Kulu At Kulu
Anadyr Kolyma
W:0.79 NME:0.64
R^2:0.42 NMSE: 0.87
R^2: 0.67
NME: 0.40
NMSE: 0.41
62.66 N / 146.5 E
km^3/month
years
month

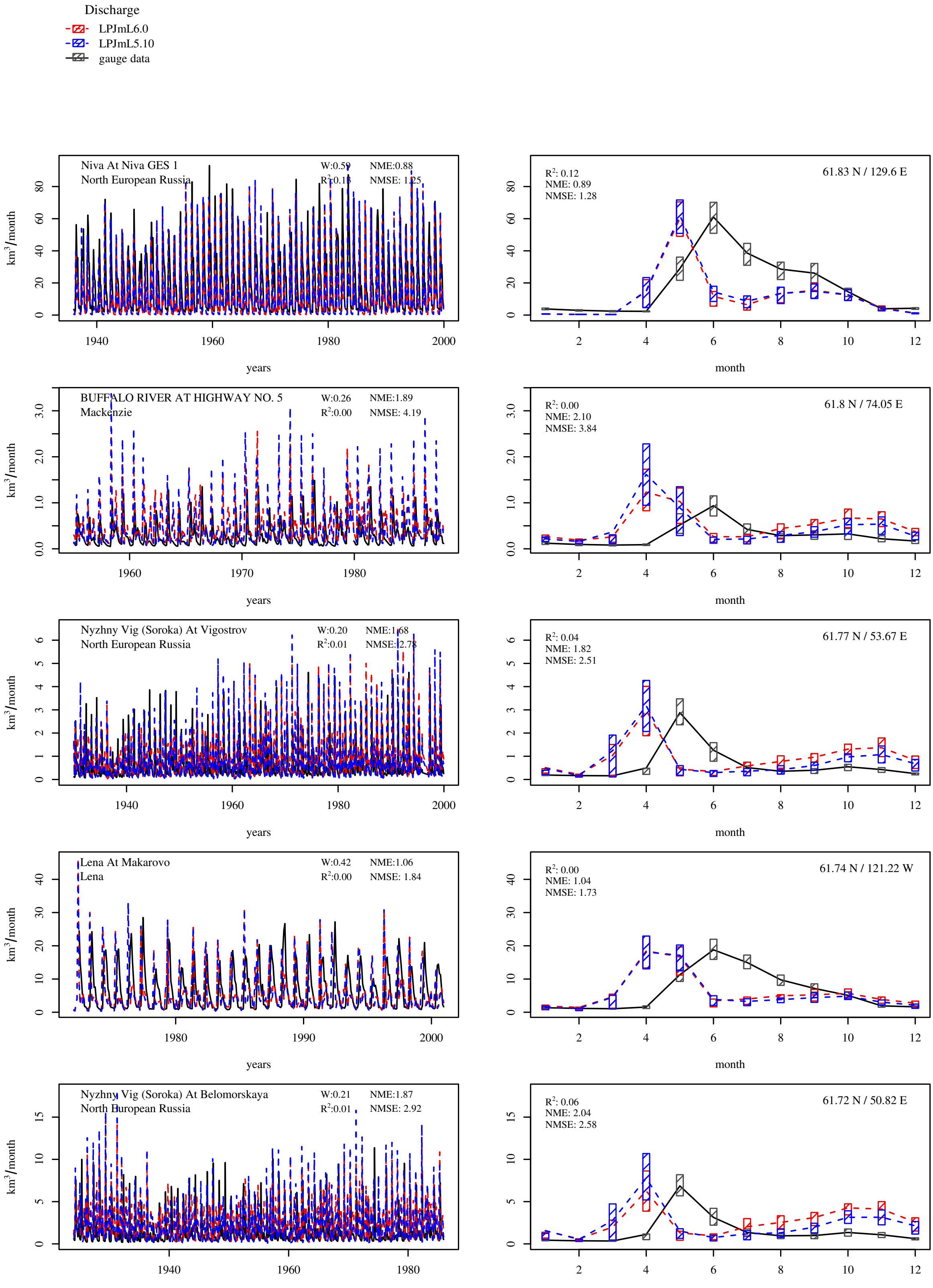

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Iluch At Priural'sk
North European Russia
W:0.35 NME:0.99
R^2:0.00 NMSE: 1.48
R²: 0.01
NME: 1.04
NMSE: 1.44
62.66 N / 56.16 E
Lena At Ust'−Kut (Zakut'e)
Lena
W:0.01 NME:7.19
R^2:0.00 NMSE: 452.17
R²: 0.02
NME: 25.56
NMSE: 2850.63
62.66 N / 114.25 W
Kirenga At Kluchy
Lena
W:0.51 NME:1.40
R^2:0.16 NMSE: 4.28
R²: 0.41
NME: 1.20
NMSE: 2.05
62.65 N / 122.9 W
Vuchegda At Phedyakovo
North European Russia
W:0.36 NME:1.19
R^2:0.01 NMSE: 1.93
R²: 0.00
NME: 1.23
NMSE: 1.86
62.63 N / 57.47 E
Kovda (Yova) At Yovskaya GES
North European Russia
W:0.21 NME:2.00
R^2:0.01 NMSE: 3.29
R²: 0.11
NME: 2.42
NMSE: 3.18
62.57 N / 39.83 E
km³/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Olenek At Sukhona
Lena
W:0.62 NME:1.09
R^2:0.23 NMSE: 2.37
R^2: 0.38
NME: 0.84
NMSE: 1.46
62.5 N / 111.18 E
Severnaya Dvina At Zvoz
North European Russia
W:0.30 NME:1.58
R^2:0.00 NMSE: 2.19
R^2: 0.01
NME: 1.71
NMSE: 1.92
62.48 N / 50.78 E
Yenisey At 7 km nizhe Bystraya
Yenisei
W:0.87 NME:0.56
R^2:0.60 NMSE: 0.55
R^2: 0.66
NME: 0.43
NMSE: 0.45
62.43 N / 152.3 E
PELLY RIVER BELOW VANGORDA CREEK
Yukon
W:0.49 NME:1.09
R^2:0.04 NMSE: 2.16
R^2: 0.08
NME: 1.10
NMSE: 1.80
62.22 N / 133.37 W
Bol'shoy Patom At Patoma
Lena
W:0.59 NME:1.21
R^2:0.23 NMSE: 3.07
R^2: 0.37
NME: 1.20
NMSE: 2.18
62.22 N / 134.13 E
km^3/month
years
month

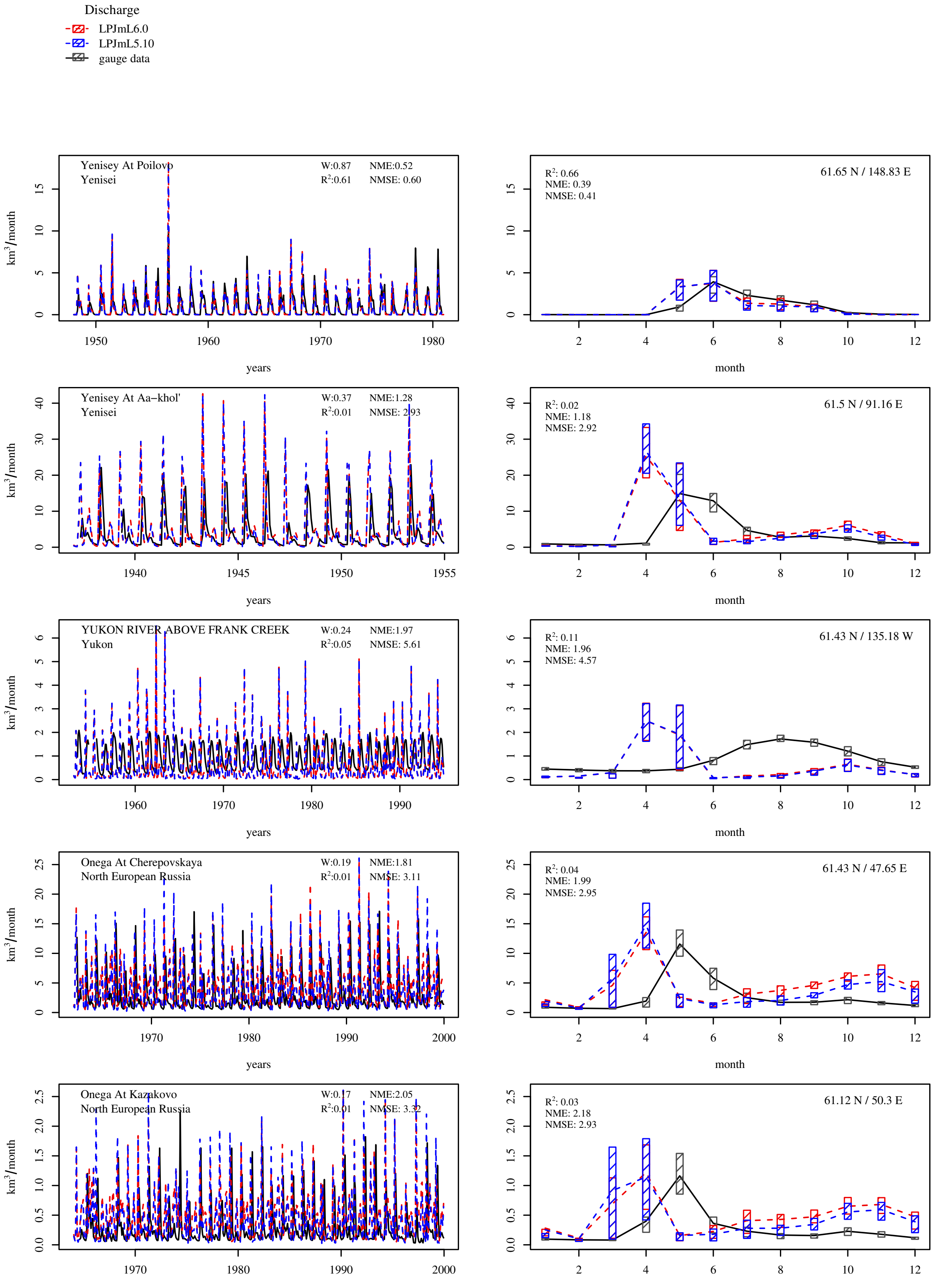


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Kovda (Kuma) At Kumskaya GES
North European Russia
W:0.17 NME:2.01
R²:0.04 NMSE: 3.54
R²: 0.17
NME: 2.48
NMSE: 3.37
62.15 N / 39.37 E
Olekma At Srednyaya Olekma
Lena
W:0.52 NME:1.42
R²:0.16 NMSE: 3.39
R²: 0.29
NME: 1.39
NMSE: 3.55
62.15 N / 117.65 E
Kolyma At Orotuk
Anadyr Kolyma
W:0.84 NME:0.53
R²:0.51 NMSE: 0.65
R²: 0.53
NME: 0.48
NMSE: 0.58
62.12 N / 148.47 E
Bokhalcha At 5.4 km from ust'ya
Anadyr Kolyma
W:0.67 NME:0.69
R²:0.24 NMSE: 0.90
R²: 0.26
NME: 0.70
NMSE: 0.90
62.1 N / 150.67 E
YUKON RIVER AT CARMACKS
Yukon
W:0.27 NME:1.75
R²:0.04 NMSE: 4.29
R²: 0.08
NME: 1.72
NMSE: 3.94
62.09 N / 136.27 W
km³/month
years
month

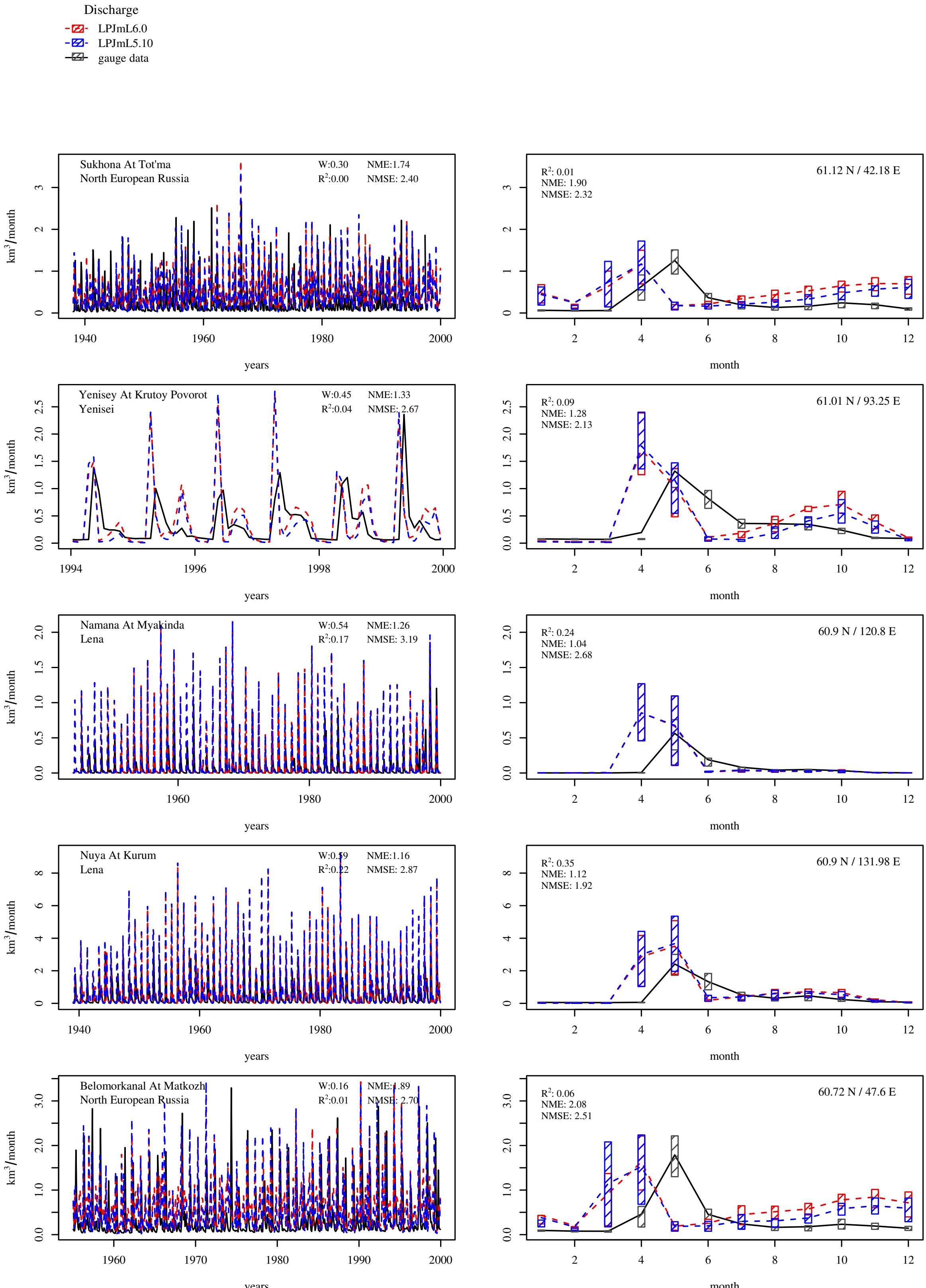

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Berezovka At Berezovka
Anadyr Kolyma
W:0.66 NME:0.71
R2:0.31 NMSE: 0.80
R2: 0.49
NME: 0.76
NMSE: 0.69
62.06 N / 160.48 E
Vitim At Romanovka
Lena
W:0.36 NME:1.84
R2:0.07 NMSE: 5.81
R2: 0.24
NME: 1.56
NMSE: 5.91
61.92 N / 124.55 E
Kulu At Kulu
Anadyr Kolyma
W:0.71 NME:0.69
R2:0.30 NMSE: 0.83
R2: 0.30
NME: 0.71
NMSE: 0.82
61.9 N / 147.42 E
KUSKOKWIM R AT CROOKED CREEK AK
Yukon
W:0.52 NME:1.08
R2:0.06 NMSE: 1.92
R2: 0.08
NME: 0.89
NMSE: 1.35
61.87 N / 158.1 W
Vitim At Spitsino
Lena
W:0.72 NME:0.67
R2:0.29 NMSE: 0.89
R2: 0.33
NME: 0.65
NMSE: 0.81
61.87 N / 135.5 E
km3/month
years
month

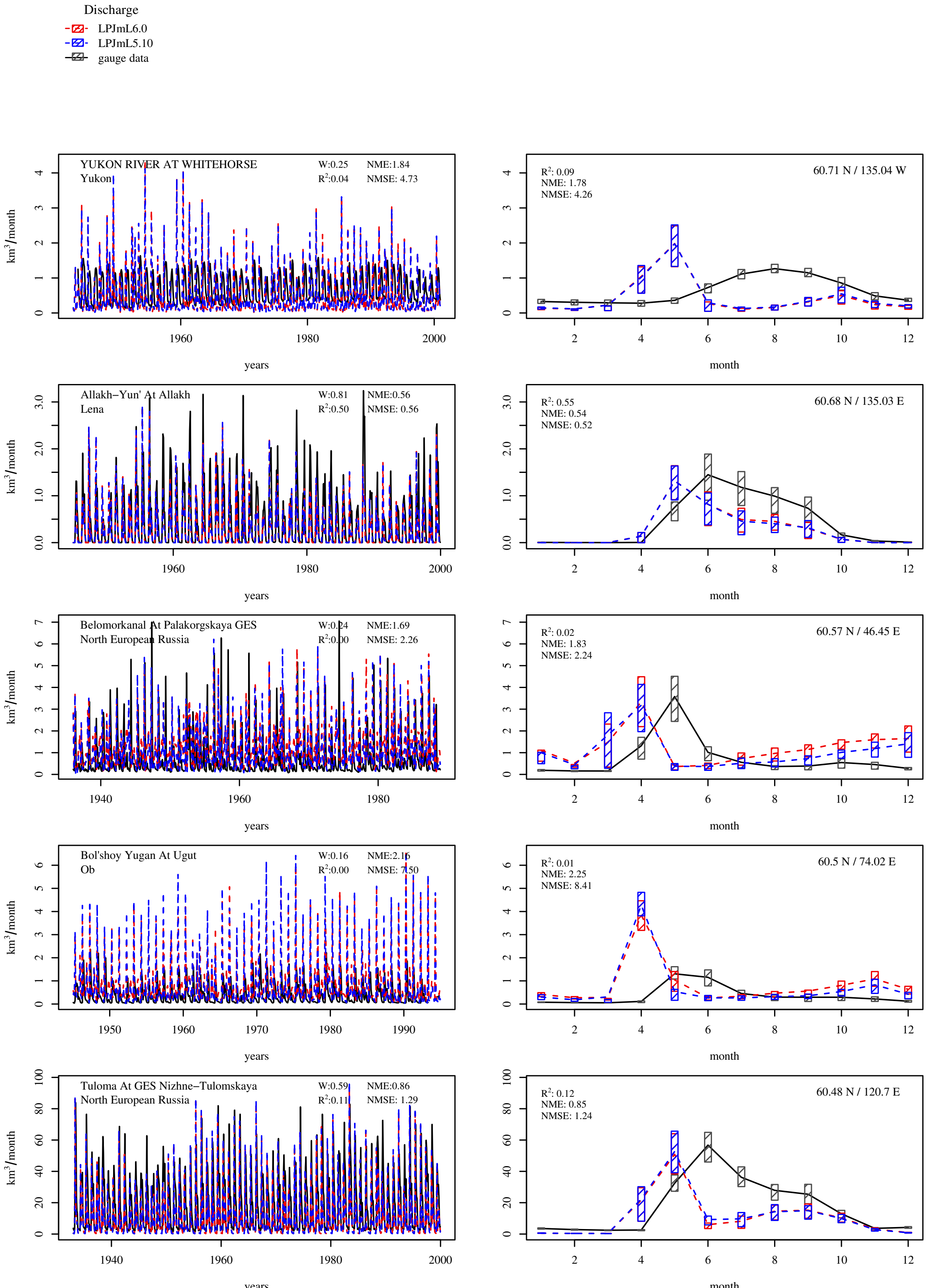

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Niva At Niva GES 1
North European Russia
W:0.59 NME:0.88
R^2:0.15 NMSE: 1.25
R^2: 0.12
NME: 0.89
NMSE: 1.28
61.83 N / 129.6 E
BUFFALO RIVER AT HIGHWAY NO. 5
Mackenzie
W:0.26 NME:1.89
R^2:0.00 NMSE: 4.19
R^2: 0.00
NME: 2.10
NMSE: 3.84
61.8 N / 74.05 E
Nyzhny Vig (Soroka) At Vigostrov
North European Russia
W:0.20 NME:1.68
R^2:0.01 NMSE: 2.78
R^2: 0.04
NME: 1.82
NMSE: 2.51
61.77 N / 53.67 E
Lena At Makarovo
Lena
W:0.42 NME:1.06
R^2:0.00 NMSE: 1.84
R^2: 0.00
NME: 1.04
NMSE: 1.73
61.74 N / 121.22 W
Nyzhny Vig (Soroka) At Belomorskaya
North European Russia
W:0.21 NME:1.87
R^2:0.01 NMSE: 2.92
R^2: 0.06
NME: 2.04
NMSE: 2.58
61.72 N / 50.82 E
km³/month
years
month

45

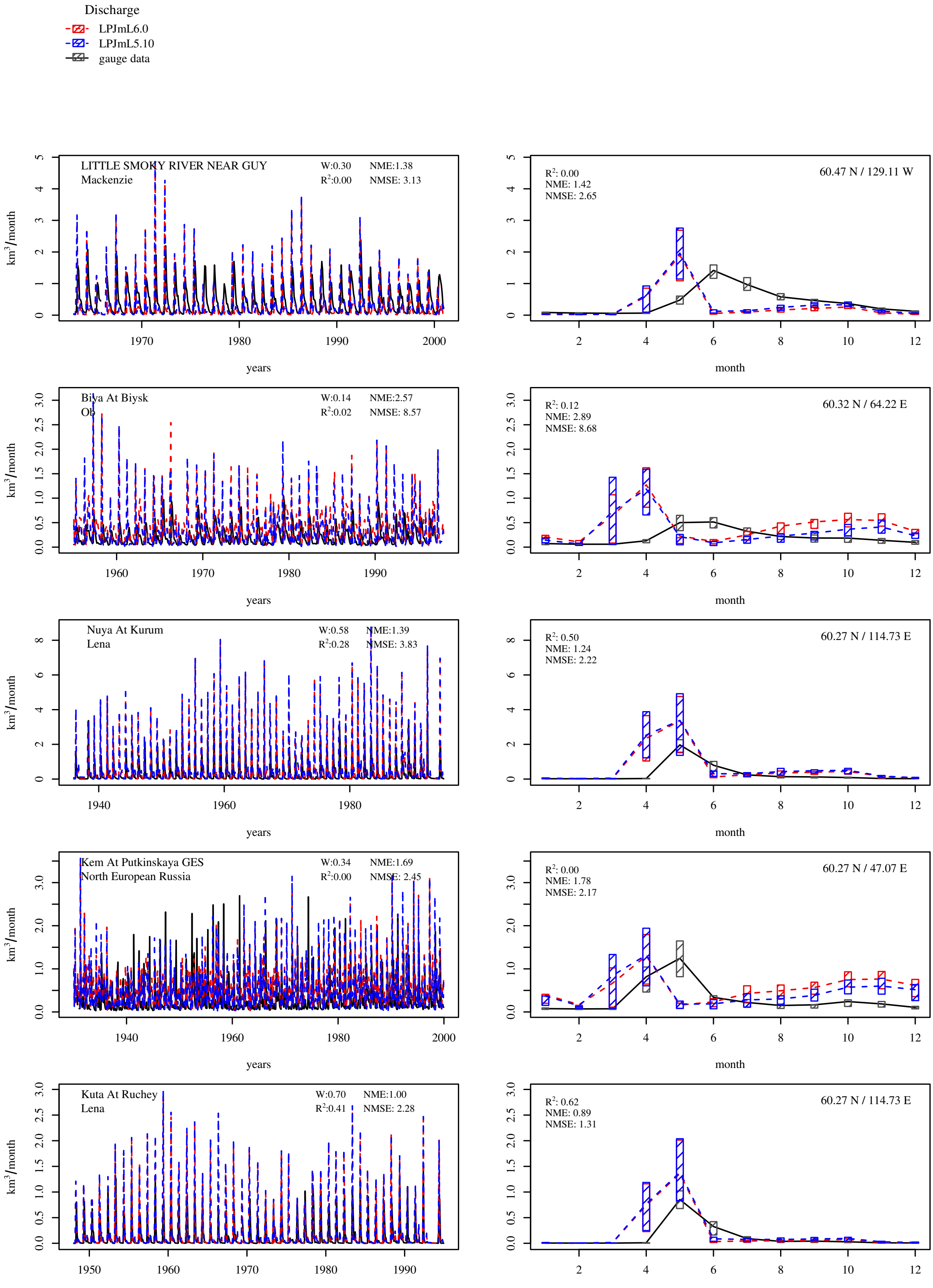


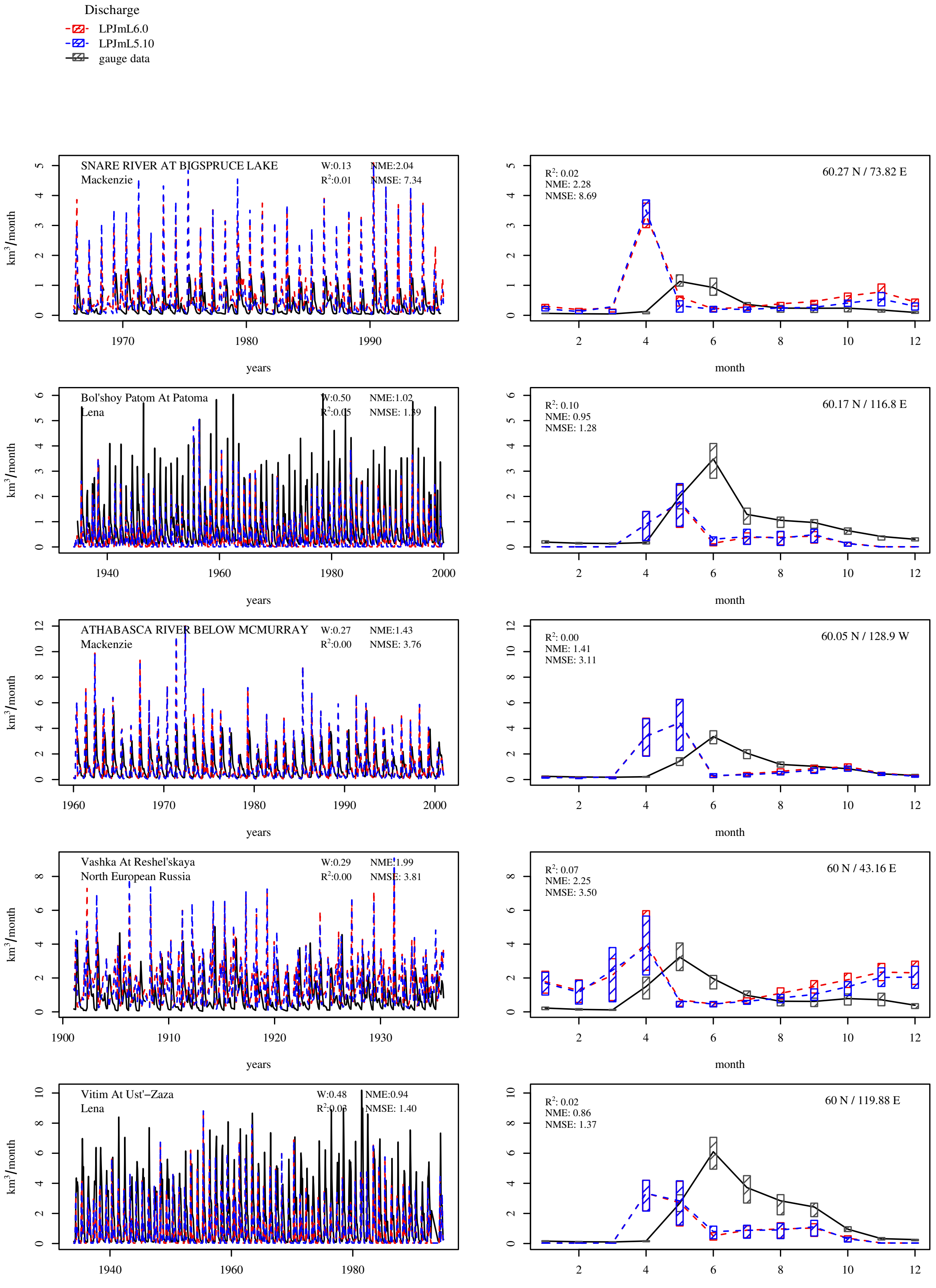
Discharge
LPJmL6.0
LPJmL5.10
gauge data
Yenisey At Poilovo
Yenisei
W:0.87 NME:0.52
R²:0.61 NMSE: 0.60
R²: 0.66
NME: 0.39
NMSE: 0.41
61.65 N / 148.83 E
Yenisey At Aa−khol'
Yenisei
W:0.37 NME:1.28
R²:0.01 NMSE: 2.93
R²: 0.02
NME: 1.18
NMSE: 2.92
61.5 N / 91.16 E
YUKON RIVER ABOVE FRANK CREEK
Yukon
W:0.24 NME:1.97
R²:0.05 NMSE: 5.61
R²: 0.11
NME: 1.96
NMSE: 4.57
61.43 N / 135.18 W
Onega At Cherepovskaya
North European Russia
W:0.19 NME:1.81
R²:0.01 NMSE: 3.11
R²: 0.04
NME: 1.99
NMSE: 2.95
61.43 N / 47.65 E
Onega At Kazakovo
North European Russia
W:0.17 NME:2.05
R²:0.01 NMSE: 3.32
R²: 0.03
NME: 2.18
NMSE: 2.93
61.12 N / 50.3 E
km³/month
years
month

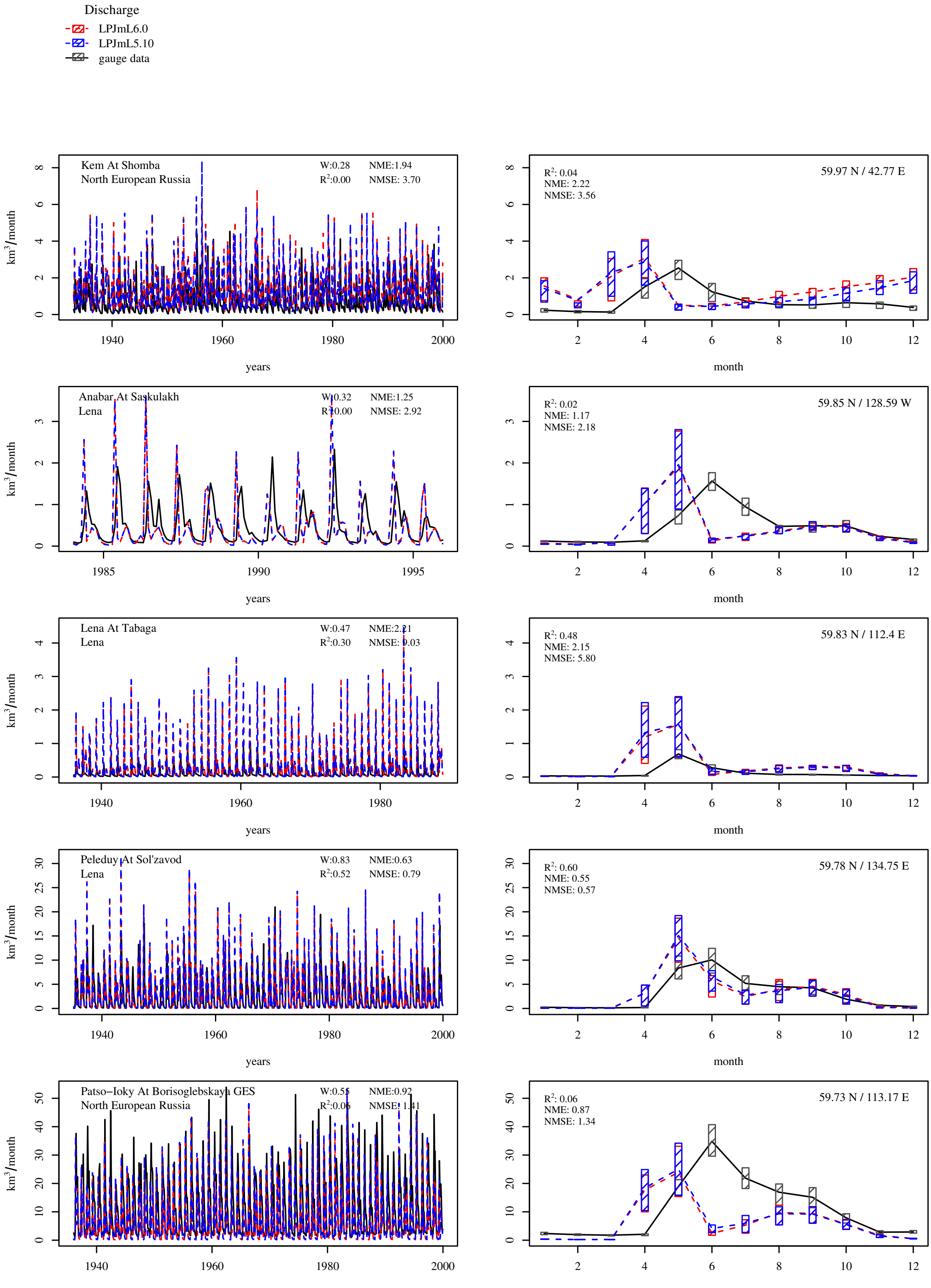

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Sukhona At Tot'ma
North European Russia
W:0.30 NME:1.74
R²:0.00 NMSE: 2.40
R²: 0.01
NME: 1.90
NMSE: 2.32
61.12 N / 42.18 E
Yenisey At Krutoy Povorot
Yenisei
W:0.45 NME:1.33
R²:0.04 NMSE: 2.67
R²: 0.09
NME: 1.28
NMSE: 2.13
61.01 N / 93.25 E
Namana At Myakinda
Lena
W:0.54 NME:1.26
R²:0.17 NMSE: 3.19
R²: 0.24
NME: 1.04
NMSE: 2.68
60.9 N / 120.8 E
Nuya At Kurum
Lena
W:0.59 NME:1.16
R²:0.22 NMSE: 2.87
R²: 0.35
NME: 1.12
NMSE: 1.92
60.9 N / 131.98 E
Belomorkanal At Matkozh
North European Russia
W:0.16 NME:1.89
R²:0.01 NMSE: 2.70
R²: 0.06
NME: 2.08
NMSE: 2.51
60.72 N / 47.6 E
km³/month
years
month

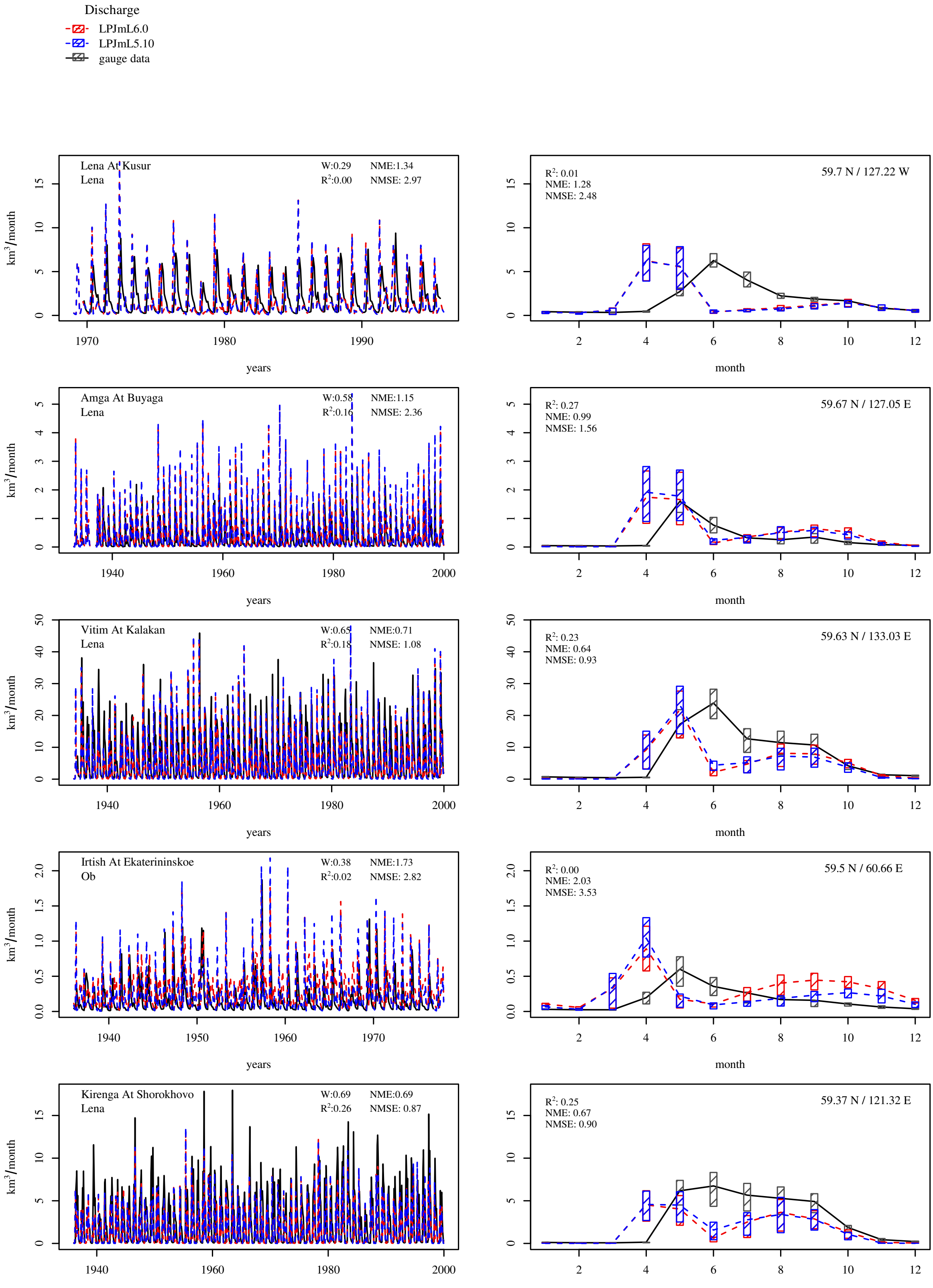


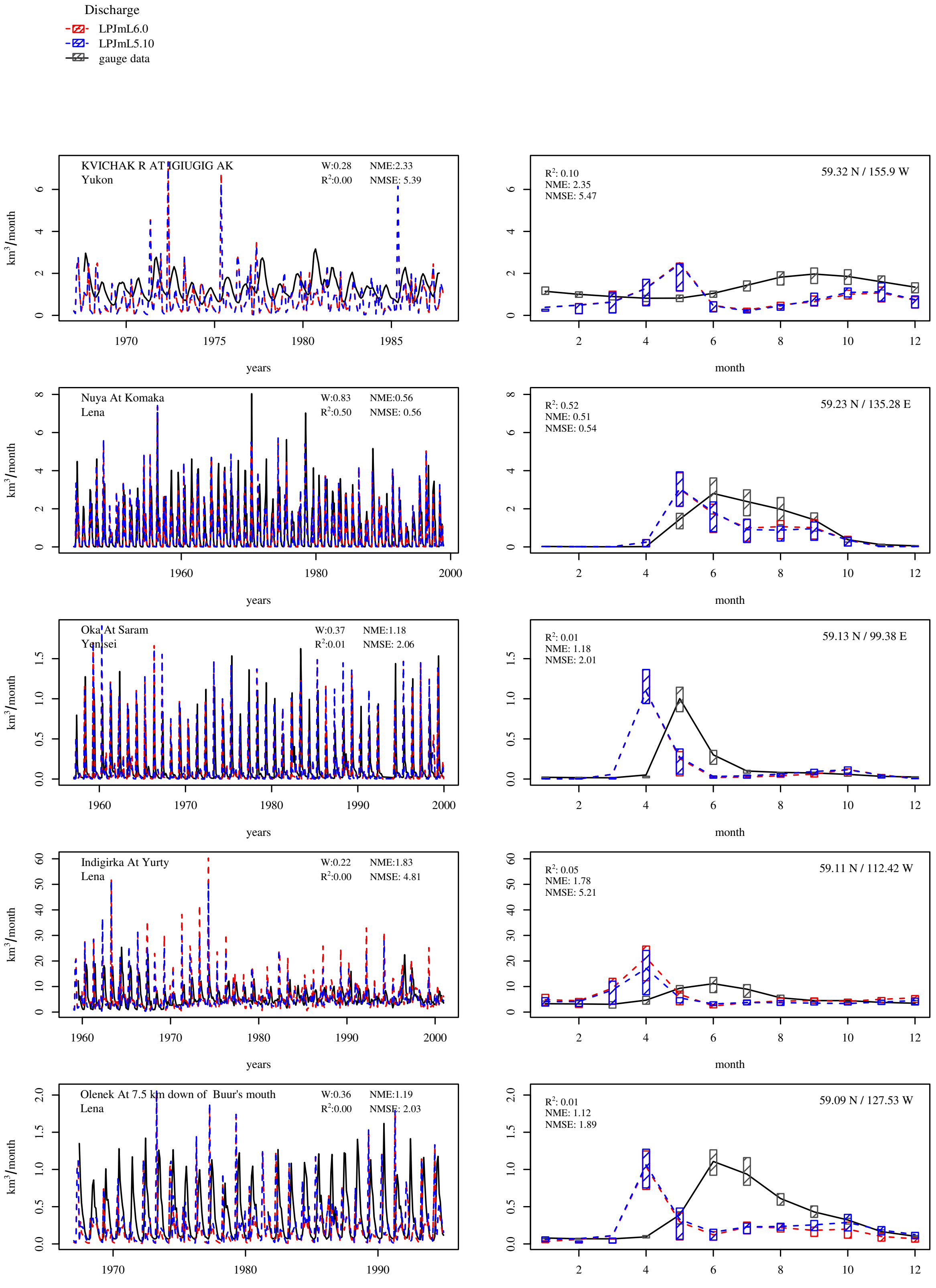
Discharge
LPJmL6.0
LPJmL5.10
gauge data
YUKON RIVER AT WHITEHORSE
Yukon
W:0.25 NME:1.84
R²:0.04 NMSE: 4.73
R²: 0.09
NME: 1.78
NMSE: 4.26
60.71 N / 135.04 W
Allakh−Yun' At Allakh
Lena
W:0.81 NME:0.56
R²:0.50 NMSE: 0.56
R²: 0.55
NME: 0.54
NMSE: 0.52
60.68 N / 135.03 E
Belomorkanal At Palakorgskaya GES
North European Russia
W:0.24 NME:1.69
R²:0.00 NMSE: 2.26
R²: 0.02
NME: 1.83
NMSE: 2.24
60.57 N / 46.45 E
Bol'shoy Yugan At Ugut
Ob
W:0.16 NME:2.16
R²:0.00 NMSE: 7.50
R²: 0.01
NME: 2.25
NMSE: 8.41
60.5 N / 74.02 E
Tuloma At GES Nizhne−Tulomskaya
North European Russia
W:0.59 NME:0.86
R²:0.11 NMSE: 1.29
R²: 0.12
NME: 0.85
NMSE: 1.24
60.48 N / 120.7 E
km³/month
years
month

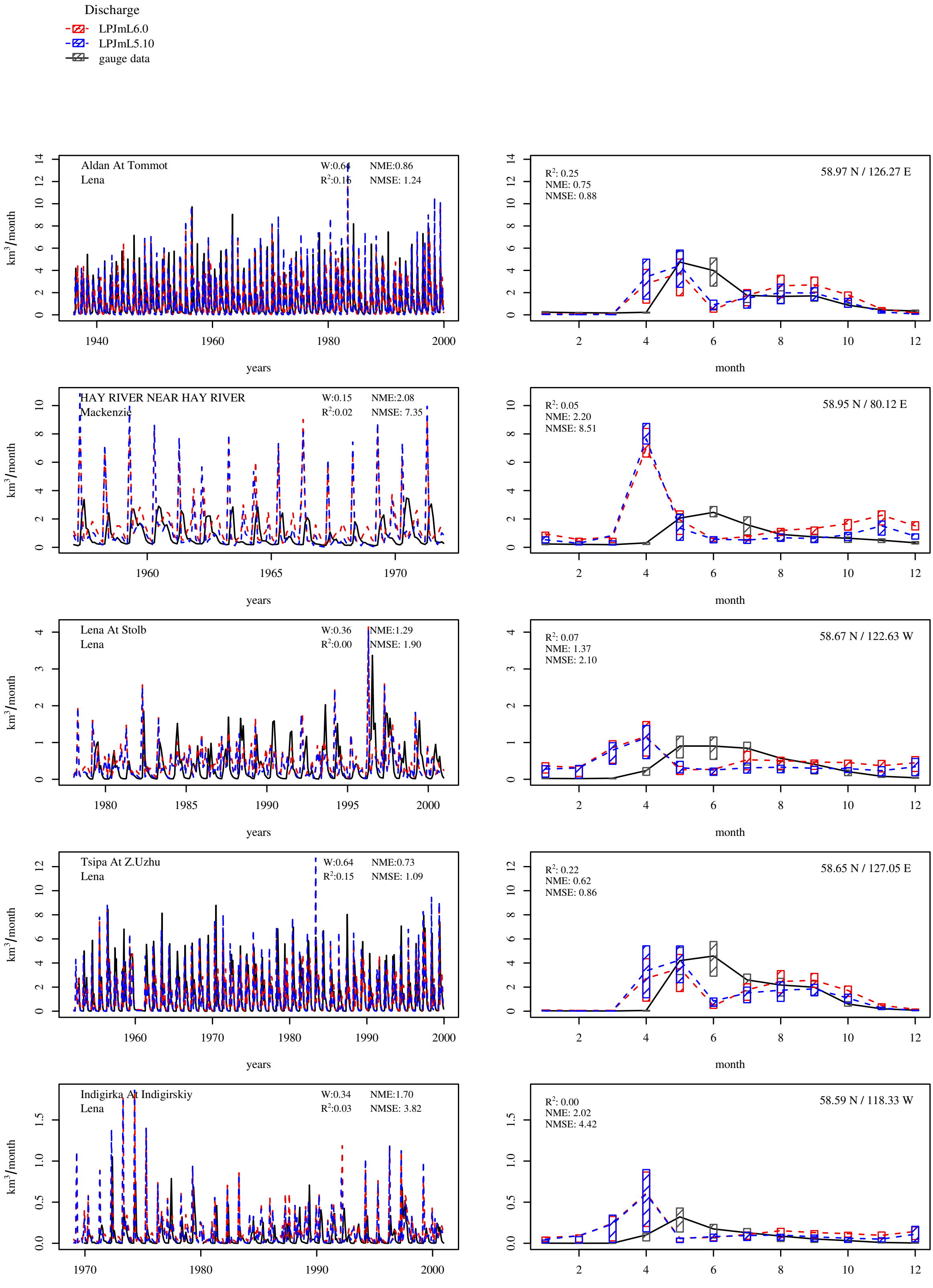

Discharge
LPJmL6.0
LPJmL5.10
gauge data
LITTLE SMOKY RIVER NEAR GUY
Mackenzie
W:0.30 NME:1.38
R^2:0.00 NMSE: 3.13
R^2: 0.00
NME: 1.42
NMSE: 2.65
60.47 N / 129.11 W
Biya At Biysk
Ob
W:0.14 NME:2.57
R^2:0.02 NMSE: 8.57
R^2: 0.12
NME: 2.89
NMSE: 8.68
60.32 N / 64.22 E
Nuya At Kurum
Lena
W:0.58 NME:1.39
R^2:0.28 NMSE: 3.83
R^2: 0.50
NME: 1.24
NMSE: 2.22
60.27 N / 114.73 E
Kem At Putkinskaya GES
North European Russia
W:0.34 NME:1.69
R^2:0.00 NMSE: 2.45
R^2: 0.00
NME: 1.78
NMSE: 2.17
60.27 N / 47.07 E
Kuta At Ruchey
Lena
W:0.70 NME:1.00
R^2:0.41 NMSE: 2.28
R^2: 0.62
NME: 0.89
NMSE: 1.31
60.27 N / 114.73 E
km^3/month
years
month

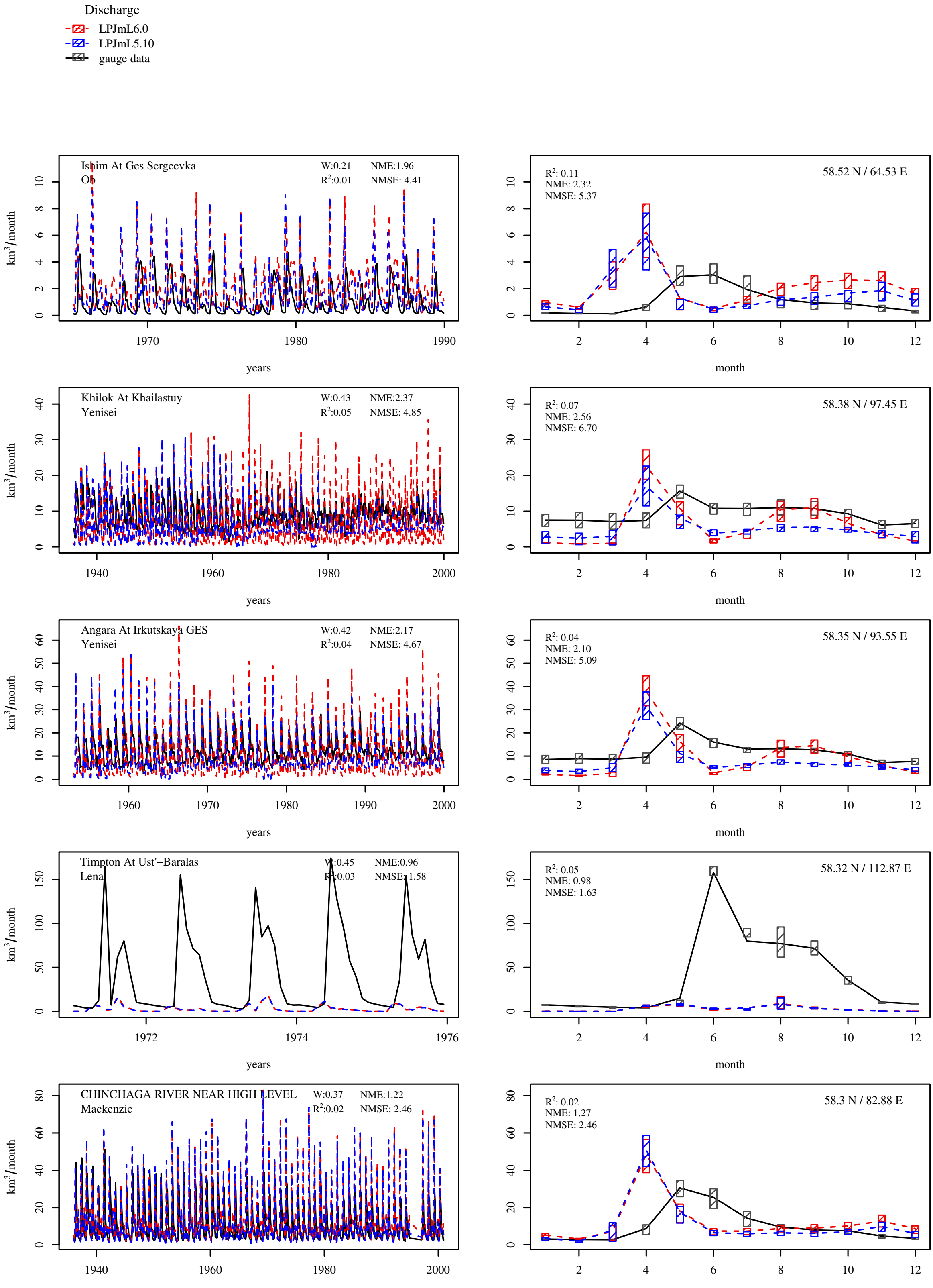

Discharge
LPJmL6.0
LPJmL5.10
gauge data
SNARE RIVER AT BIGSPRUCE LAKE
Mackenzie
W:0.13 NME:2.04
R²:0.01 NMSE: 7.34
R²: 0.02
NME: 2.28
NMSE: 8.69
60.27 N / 73.82 E
Bol'shoy Patom At Patoma
Lena
W:0.50 NME:1.02
R²:0.05 NMSE: 1.39
R²: 0.10
NME: 0.95
NMSE: 1.28
60.17 N / 116.8 E
ATHABASCA RIVER BELOW MCMURRAY
Mackenzie
W:0.27 NME:1.43
R²:0.00 NMSE: 3.76
R²: 0.00
NME: 1.41
NMSE: 3.11
60.05 N / 128.9 W
Vashka At Reshel'skaya
North European Russia
W:0.29 NME:1.99
R²:0.00 NMSE: 3.81
R²: 0.07
NME: 2.25
NMSE: 3.50
60 N / 43.16 E
Vitim At Ust'−Zaza
Lena
W:0.48 NME:0.94
R²:0.03 NMSE: 1.40
R²: 0.02
NME: 0.86
NMSE: 1.37
60 N / 119.88 E
km³/month
years
month

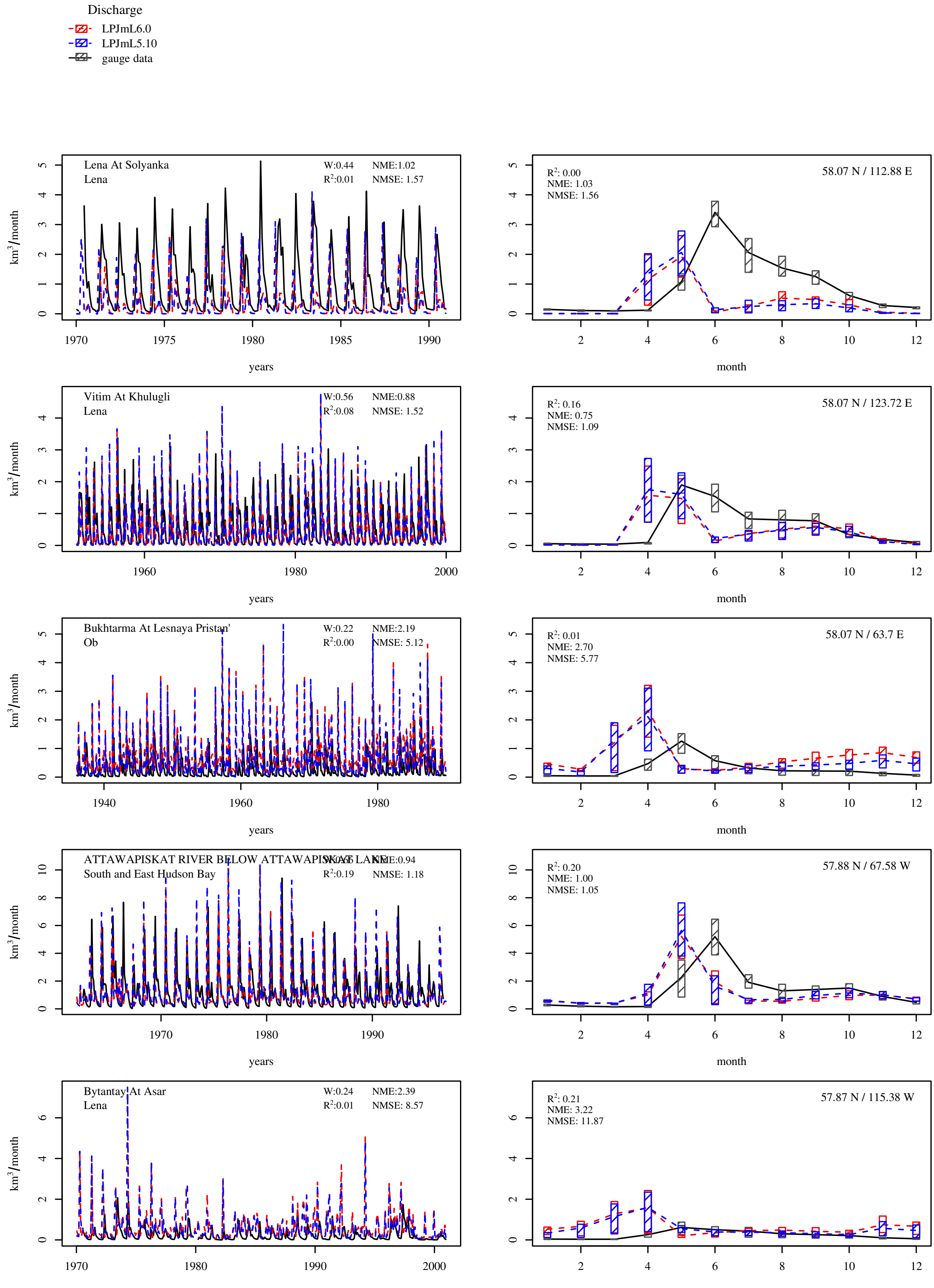

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Kem At Shomba
North European Russia
W:0.28 NME:1.94
R²:0.00 NMSE: 3.70
R²: 0.04
NME: 2.22
NMSE: 3.56
59.97 N / 42.77 E
Anabar At Saskulakh
Lena
W:0.32 NME:1.25
R²:0.00 NMSE: 2.92
R²: 0.02
NME: 1.17
NMSE: 2.18
59.85 N / 128.59 W
Lena At Tabaga
Lena
W:0.47 NME:2.21
R²:0.30 NMSE: 9.03
R²: 0.48
NME: 2.15
NMSE: 5.80
59.83 N / 112.4 E
Peleduy At Sol'zavod
Lena
W:0.83 NME:0.63
R²:0.52 NMSE: 0.79
R²: 0.60
NME: 0.55
NMSE: 0.57
59.78 N / 134.75 E
Patso−Ioky At Borisoglebskaya GES
North European Russia
W:0.55 NME:0.92
R²:0.06 NMSE: 1.41
R²: 0.06
NME: 0.87
NMSE: 1.34
59.73 N / 113.17 E
km³/month
years
month

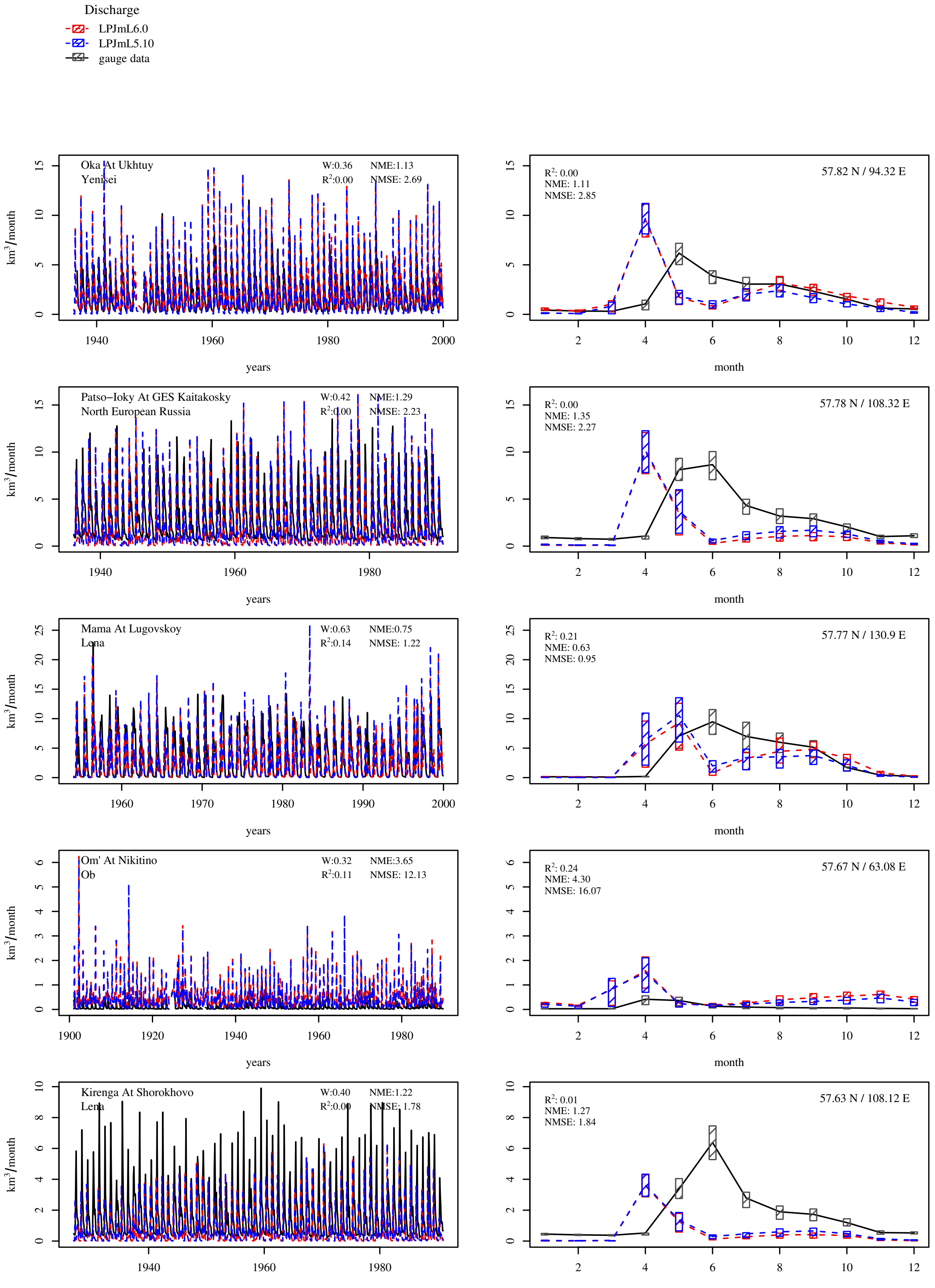

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Lena At Kusur
Lena
W:0.29 NME:1.34
R²:0.00 NMSE: 2.97
R²: 0.01
NME: 1.28
NMSE: 2.48
59.7 N / 127.22 W
Amga At Buyaga
Lena
W:0.58 NME:1.15
R²:0.16 NMSE: 2.36
R²: 0.27
NME: 0.99
NMSE: 1.56
59.67 N / 127.05 E
Vitim At Kalakan
Lena
W:0.65 NME:0.71
R²:0.18 NMSE: 1.08
R²: 0.23
NME: 0.64
NMSE: 0.93
59.63 N / 133.03 E
Irtish At Ekaterininskoe
Ob
W:0.38 NME:1.73
R²:0.02 NMSE: 2.82
R²: 0.00
NME: 2.03
NMSE: 3.53
59.5 N / 60.66 E
Kirenga At Shorokhovo
Lena
W:0.69 NME:0.69
R²:0.26 NMSE: 0.87
R²: 0.25
NME: 0.67
NMSE: 0.90
59.37 N / 121.32 E
km³/month
years
month

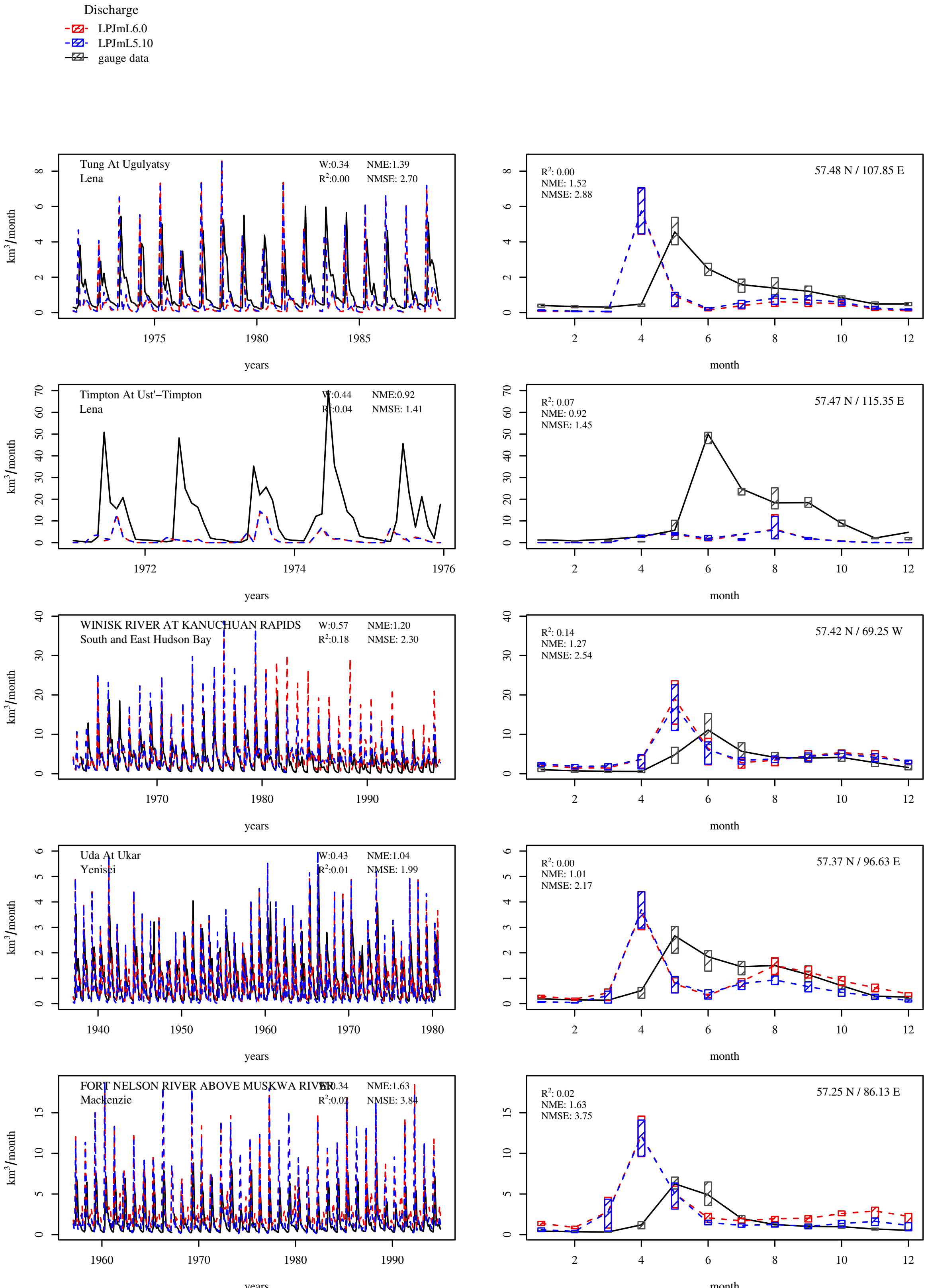

Discharge
LPJmL6.0
LPJmL5.10
gauge data
KVICHAK R AT IGIUGIG AK
Yukon
W:0.28
NME:2.33
R²:0.00
NMSE: 5.39
R²: 0.10
NME: 2.35
NMSE: 5.47
59.32 N / 155.9 W
Nuya At Komaka
Lena
W:0.83
NME:0.56
R²:0.50
NMSE: 0.56
R²: 0.52
NME: 0.51
NMSE: 0.54
59.23 N / 135.28 E
Oka At Saram
Yenisei
W:0.37
NME:1.18
R²:0.01
NMSE: 2.06
R²: 0.01
NME: 1.18
NMSE: 2.01
59.13 N / 99.38 E
Indigirka At Yurty
Lena
W:0.22
NME:1.83
R²:0.00
NMSE: 4.81
R²: 0.05
NME: 1.78
NMSE: 5.21
59.11 N / 112.42 W
Olenek At 7.5 km down of Buur's mouth
Lena
W:0.36
NME:1.19
R²:0.00
NMSE: 2.03
R²: 0.01
NME: 1.12
NMSE: 1.89
59.09 N / 127.53 W
km³/month
years
month

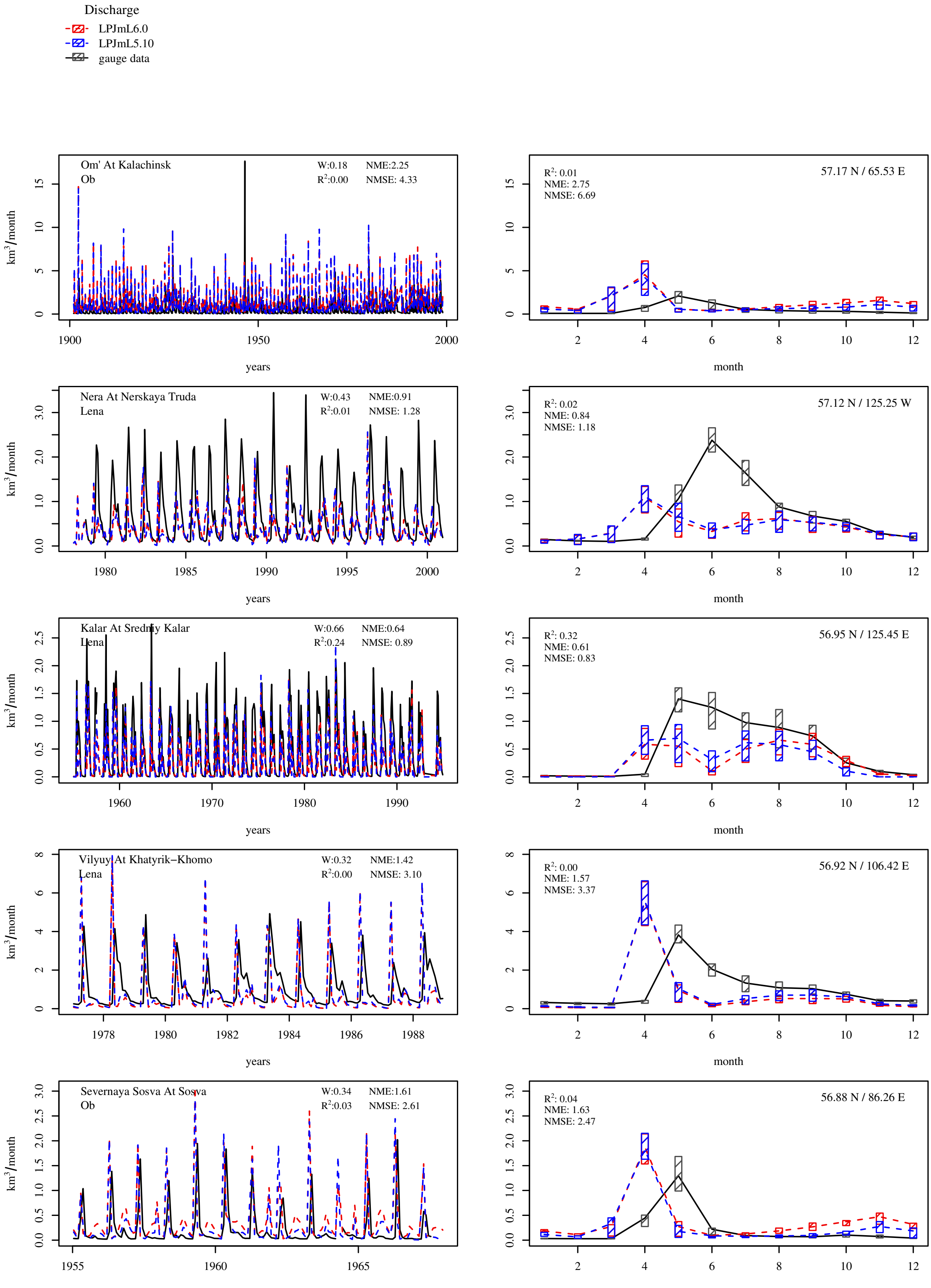

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Aldan At Tommot
Lena
W:0.64 NME:0.86
R²:0.16 NMSE: 1.24
R²: 0.25
NME: 0.75
NMSE: 0.88
58.97 N / 126.27 E
HAY RIVER NEAR HAY RIVER
Mackenzie
W:0.15 NME:2.08
R²:0.02 NMSE: 7.35
R²: 0.05
NME: 2.20
NMSE: 8.51
58.95 N / 80.12 E
Lena At Stolb
Lena
W:0.36 NME:1.29
R²:0.00 NMSE: 1.90
R²: 0.07
NME: 1.37
NMSE: 2.10
58.67 N / 122.63 W
Tsipa At Z.Uzhu
Lena
W:0.64 NME:0.73
R²:0.15 NMSE: 1.09
R²: 0.22
NME: 0.62
NMSE: 0.86
58.65 N / 127.05 E
Indigirka At Indigirskiy
Lena
W:0.34 NME:1.70
R²:0.03 NMSE: 3.82
R²: 0.00
NME: 2.02
NMSE: 4.42
58.59 N / 118.33 W
km³/month
years
month

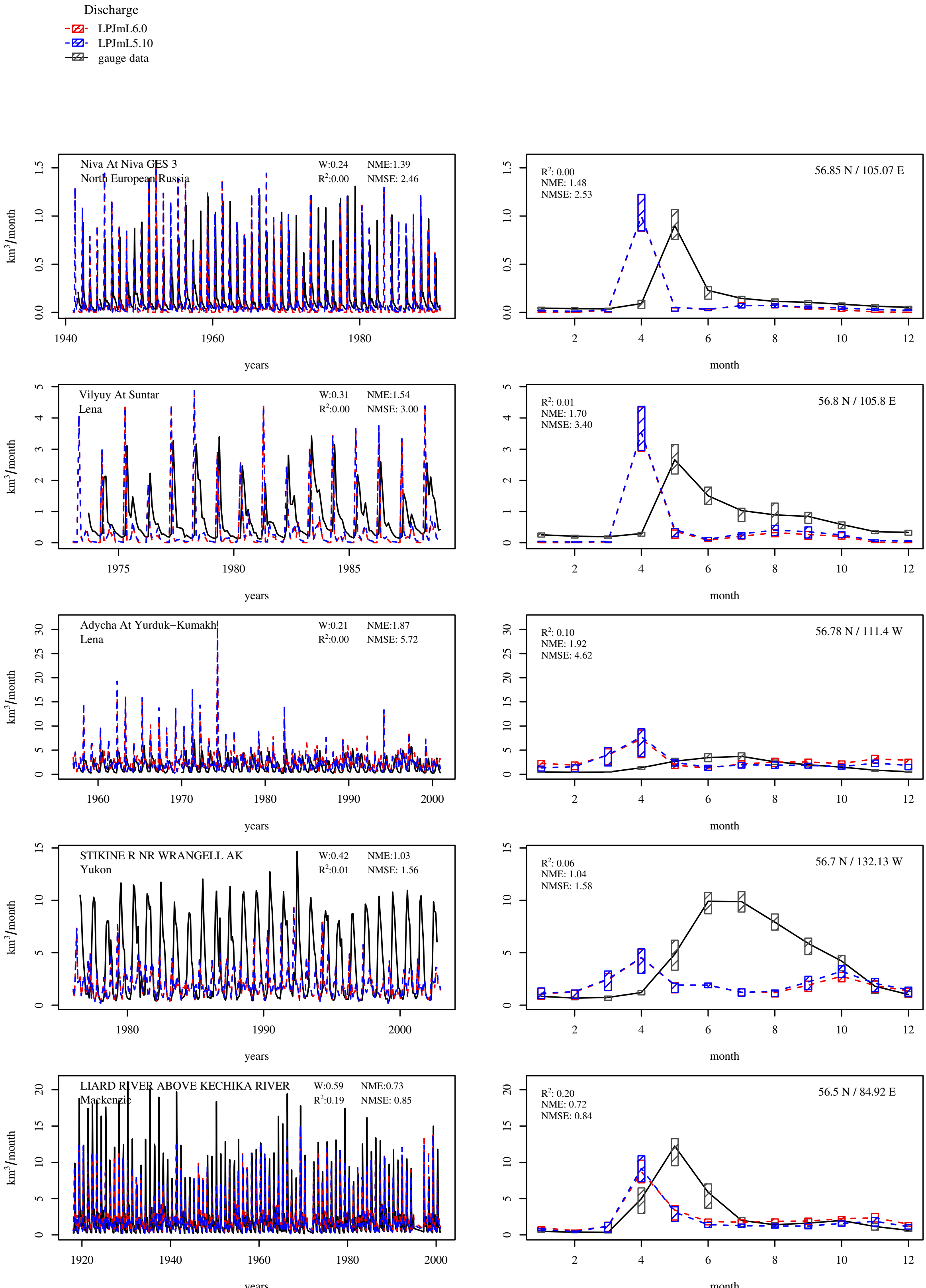

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Ishim At Ges Sergeevka
Ob
W:0.21 NME:1.96
R²:0.01 NMSE: 4.41
R²: 0.11
NME: 2.32
NMSE: 5.37
58.52 N / 64.53 E
Khilok At Khailastuy
Yenisei
W:0.43 NME:2.37
R²:0.05 NMSE: 4.85
R²: 0.07
NME: 2.56
NMSE: 6.70
58.38 N / 97.45 E
Angara At Irkutskaya GES
Yenisei
W:0.42 NME:2.17
R²:0.04 NMSE: 4.67
R²: 0.04
NME: 2.10
NMSE: 5.09
58.35 N / 93.55 E
Timpton At Ust'−Baralas
Lena
W:0.45 NME:0.96
R²:0.03 NMSE: 1.58
R²: 0.05
NME: 0.98
NMSE: 1.63
58.32 N / 112.87 E
CHINCHAGA RIVER NEAR HIGH LEVEL
Mackenzie
W:0.37 NME:1.22
R²:0.02 NMSE: 2.46
R²: 0.02
NME: 1.27
NMSE: 2.46
58.3 N / 82.88 E
km³/month
years
month

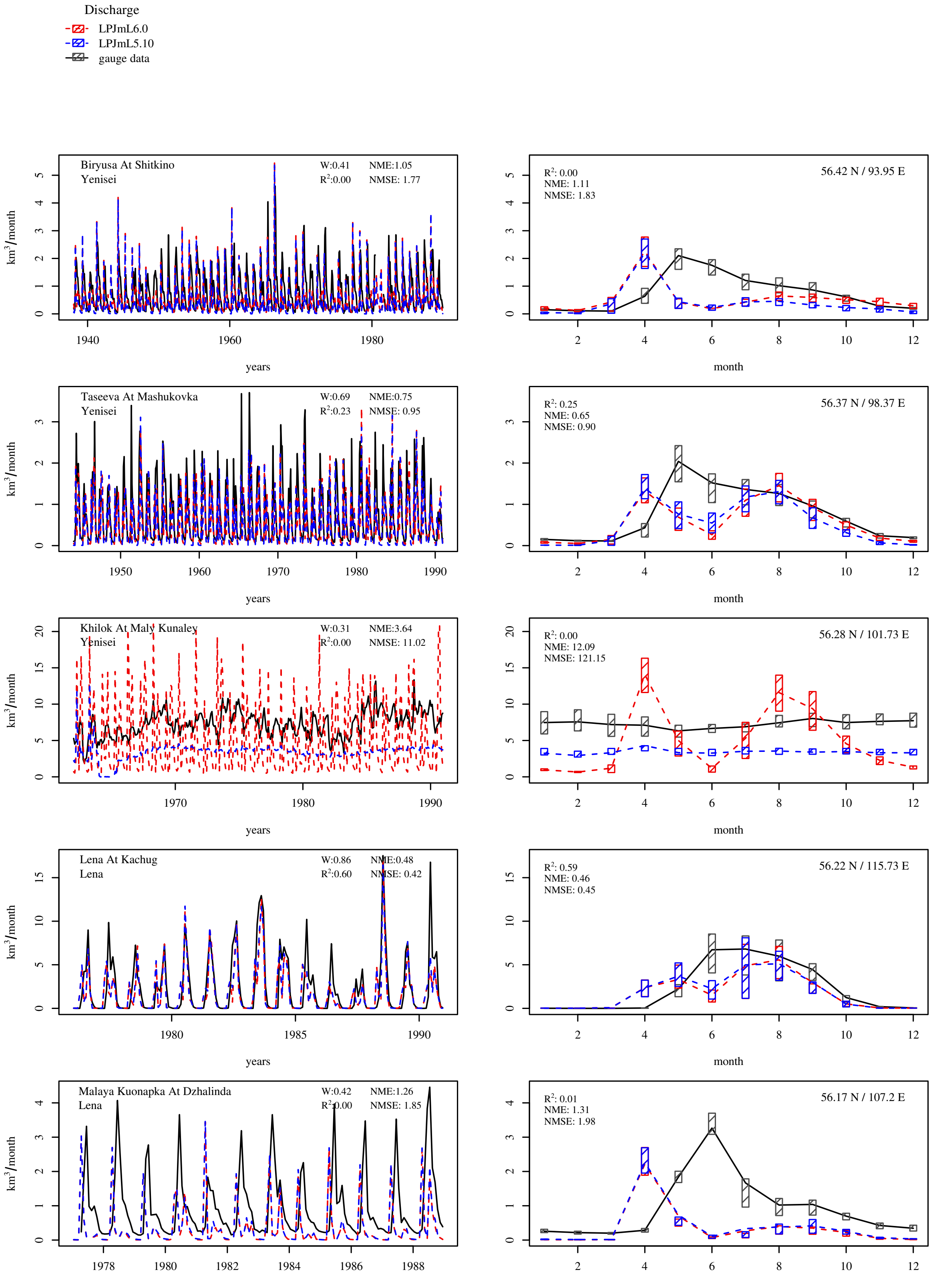

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Lena At Solyanka
Lena
W:0.44 NME:1.02
R²:0.01 NMSE: 1.57
R²: 0.00
NME: 1.03
NMSE: 1.56
58.07 N / 112.88 E
Vitim At Khulugli
Lena
W:0.56 NME:0.88
R²:0.08 NMSE: 1.52
R²: 0.16
NME: 0.75
NMSE: 1.09
58.07 N / 123.72 E
Bukhtarma At Lesnaya Pristan'
Ob
W:0.22 NME:2.19
R²:0.00 NMSE: 5.12
R²: 0.01
NME: 2.70
NMSE: 5.77
58.07 N / 63.7 E
ATTAWAPISKAT RIVER BELOW ATTAWAPISKAT LAKE
South and East Hudson Bay
NME:0.94
R²:0.19 NMSE: 1.18
R²: 0.20
NME: 1.00
NMSE: 1.05
57.88 N / 67.58 W
Bytantay At Asar
Lena
W:0.24 NME:2.39
R²:0.01 NMSE: 8.57
R²: 0.21
NME: 3.22
NMSE: 11.87
57.87 N / 115.38 W
km³/month
years
month

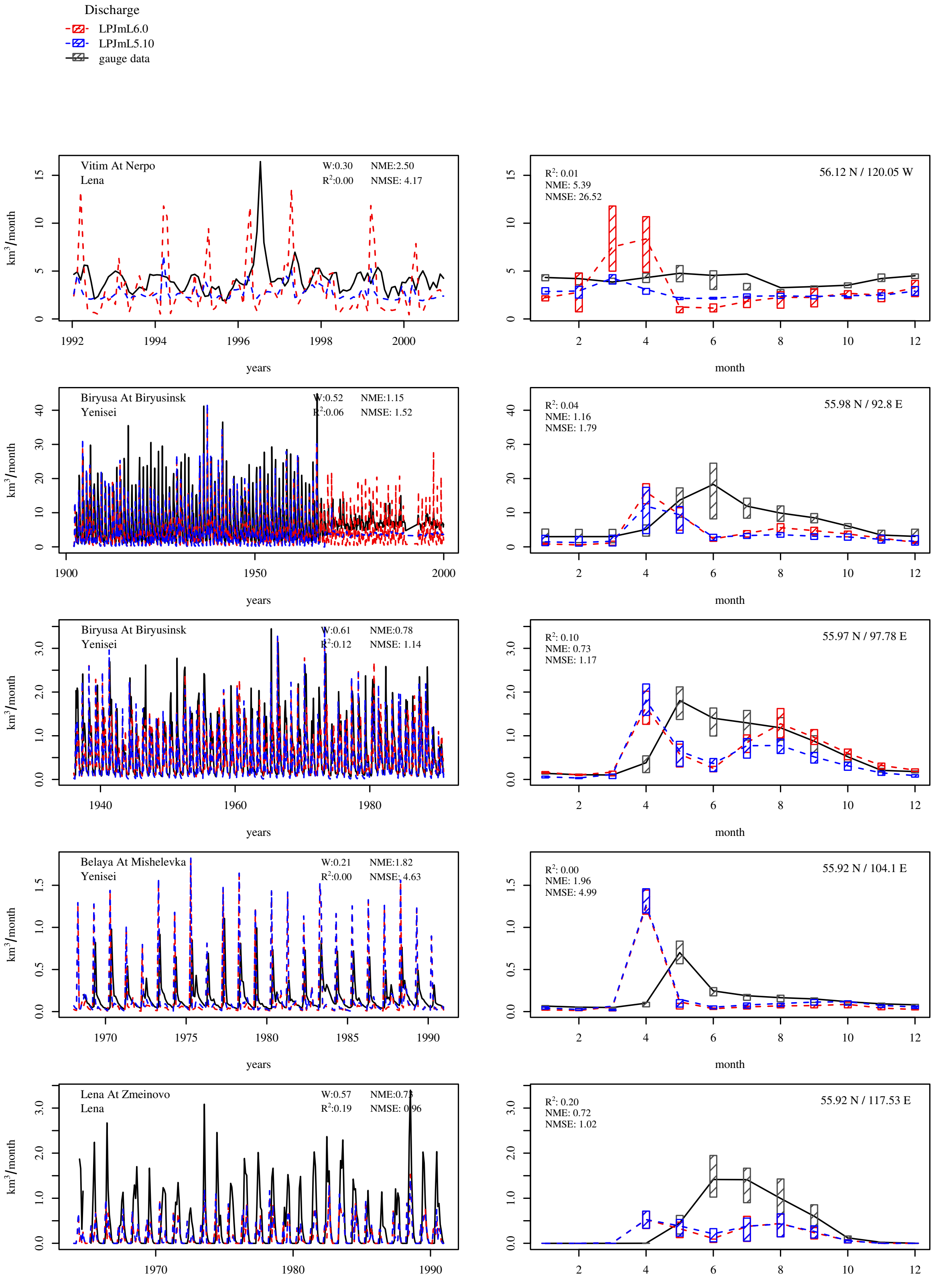

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Oka At Ukhtuy
Yenisei
W:0.36 NME:1.13
R^2:0.00 NMSE: 2.69
R^2: 0.00
NME: 1.11
NMSE: 2.85
57.82 N / 94.32 E
Patso−Ioky At GES Kaitakosky
North European Russia
W:0.42 NME:1.29
R^2:0.00 NMSE: 2.23
R^2: 0.00
NME: 1.35
NMSE: 2.27
57.78 N / 108.32 E
Mama At Lugovskoy
Lena
W:0.63 NME:0.75
R^2:0.14 NMSE: 1.22
R^2: 0.21
NME: 0.63
NMSE: 0.95
57.77 N / 130.9 E
Om' At Nikitino
Ob
W:0.32 NME:3.65
R^2:0.11 NMSE: 12.13
R^2: 0.24
NME: 4.30
NMSE: 16.07
57.67 N / 63.08 E
Kirenga At Shorokhovo
Lena
W:0.40 NME:1.22
R^2:0.00 NMSE: 1.78
R^2: 0.01
NME: 1.27
NMSE: 1.84
57.63 N / 108.12 E
km^3/month
years
month

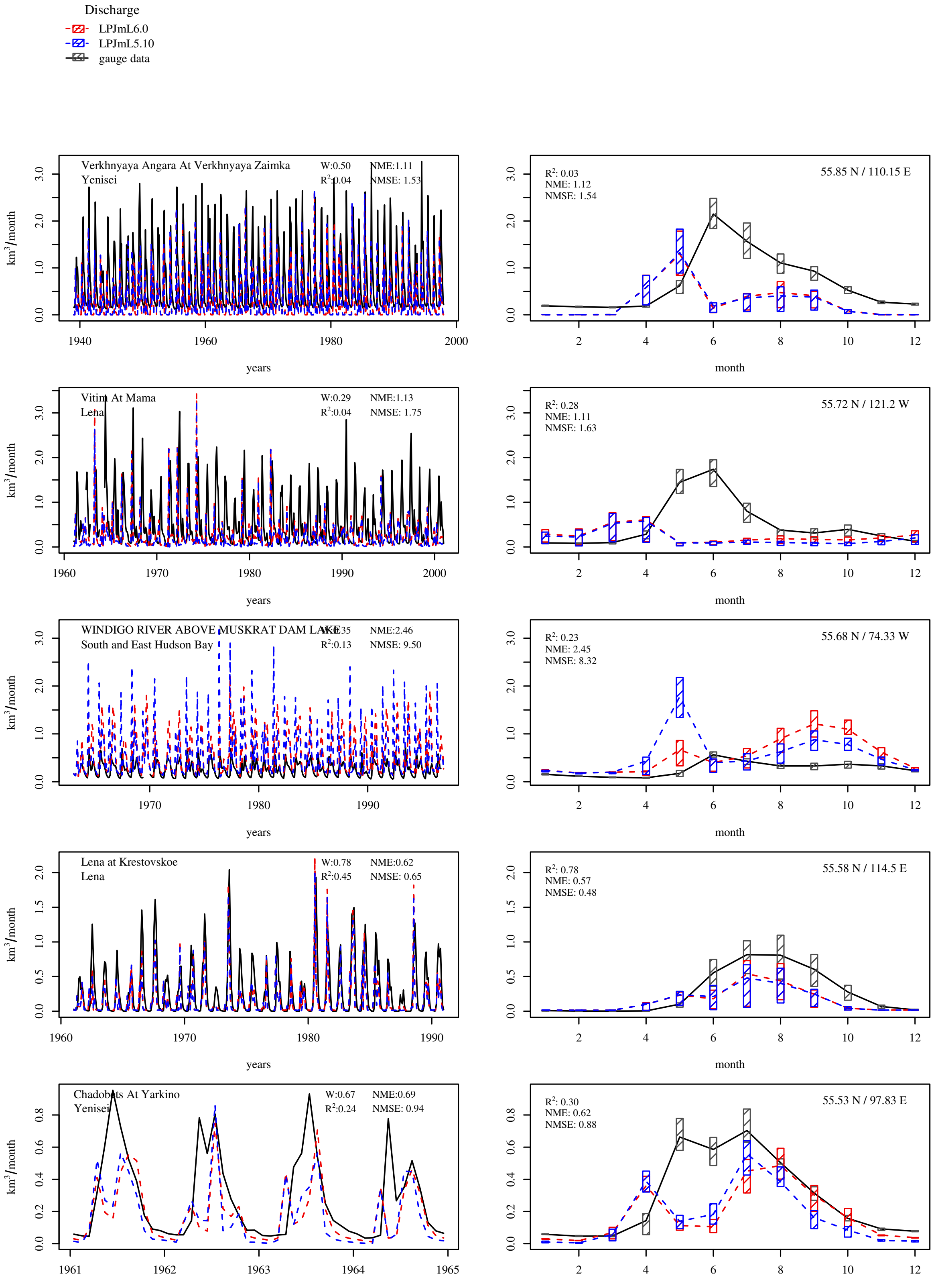

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Tung At Ugulyatsy
Lena
W:0.34 NME:1.39
R²:0.00 NMSE: 2.70
R²: 0.00
NME: 1.52
NMSE: 2.88
57.48 N / 107.85 E
Timpton At Ust'−Timpton
Lena
W:0.44 NME:0.92
R²:0.04 NMSE: 1.41
R²: 0.07
NME: 0.92
NMSE: 1.45
57.47 N / 115.35 E
WINISK RIVER AT KANUCHUAN RAPIDS
South and East Hudson Bay
W:0.57 NME:1.20
R²:0.18 NMSE: 2.30
R²: 0.14
NME: 1.27
NMSE: 2.54
57.42 N / 69.25 W
Uda At Ukar
Yenisei
W:0.43 NME:1.04
R²:0.01 NMSE: 1.99
R²: 0.00
NME: 1.01
NMSE: 2.17
57.37 N / 96.63 E
FORT NELSON RIVER ABOVE MUSKWA RIVER
Mackenzie
W:0.34 NME:1.63
R²:0.02 NMSE: 3.84
R²: 0.02
NME: 1.63
NMSE: 3.75
57.25 N / 86.13 E
km³/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Om' At Kalachinsk
Ob
W:0.18 NME:2.25
R²:0.00 NMSE: 4.33
R²: 0.01
NME: 2.75
NMSE: 6.69
57.17 N / 65.53 E
Nera At Nerskaya Truda
Lena
W:0.43 NME:0.91
R²:0.01 NMSE: 1.28
R²: 0.02
NME: 0.84
NMSE: 1.18
57.12 N / 125.25 W
Kalar At Sredniy Kalar
Lena
W:0.66 NME:0.64
R²:0.24 NMSE: 0.89
R²: 0.32
NME: 0.61
NMSE: 0.83
56.95 N / 125.45 E
Vilyuy At Khatyrik−Khomo
Lena
W:0.32 NME:1.42
R²:0.00 NMSE: 3.10
R²: 0.00
NME: 1.57
NMSE: 3.37
56.92 N / 106.42 E
Severnaya Sosva At Sosva
Ob
W:0.34 NME:1.61
R²:0.03 NMSE: 2.61
R²: 0.04
NME: 1.63
NMSE: 2.47
56.88 N / 86.26 E
km³/month
years
month

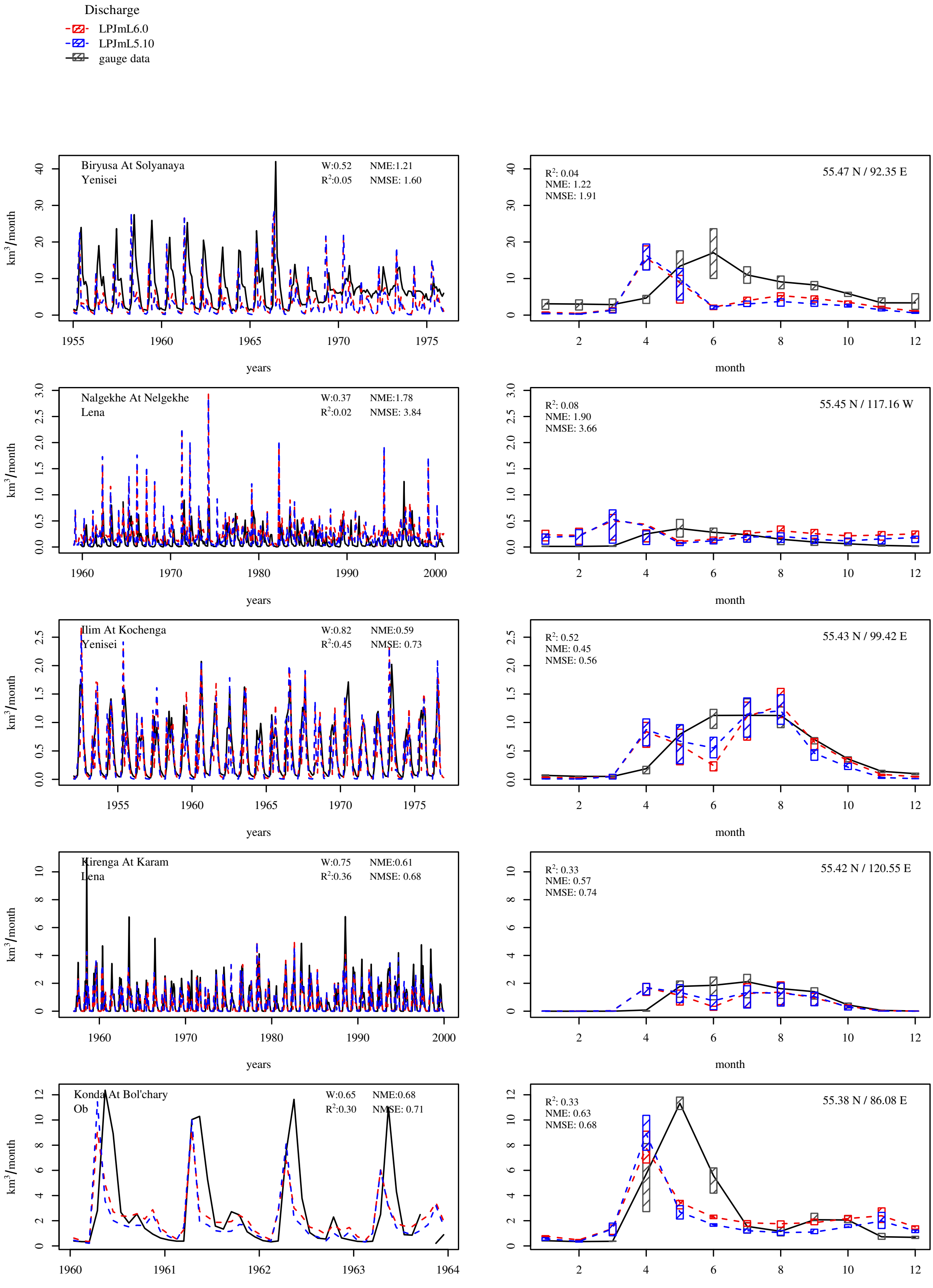

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Niva At Niva GES 3
North European Russia
W:0.24 NME:1.39
R²:0.00 NMSE: 2.46
R²: 0.00
NME: 1.48
NMSE: 2.53
56.85 N / 105.07 E
Vilyuy At Suntar
Lena
W:0.31 NME:1.54
R²:0.00 NMSE: 3.00
R²: 0.01
NME: 1.70
NMSE: 3.40
56.8 N / 105.8 E
Adycha At Yurduk−Kumakh
Lena
W:0.21 NME:1.87
R²:0.00 NMSE: 5.72
R²: 0.10
NME: 1.92
NMSE: 4.62
56.78 N / 111.4 W
STIKINE R NR WRANGELL AK
Yukon
W:0.42 NME:1.03
R²:0.01 NMSE: 1.56
R²: 0.06
NME: 1.04
NMSE: 1.58
56.7 N / 132.13 W
LIARD RIVER ABOVE KECHIKA RIVER
Mackenzie
W:0.59 NME:0.73
R²:0.19 NMSE: 0.85
R²: 0.20
NME: 0.72
NMSE: 0.84
56.5 N / 84.92 E
km³/month
years
month

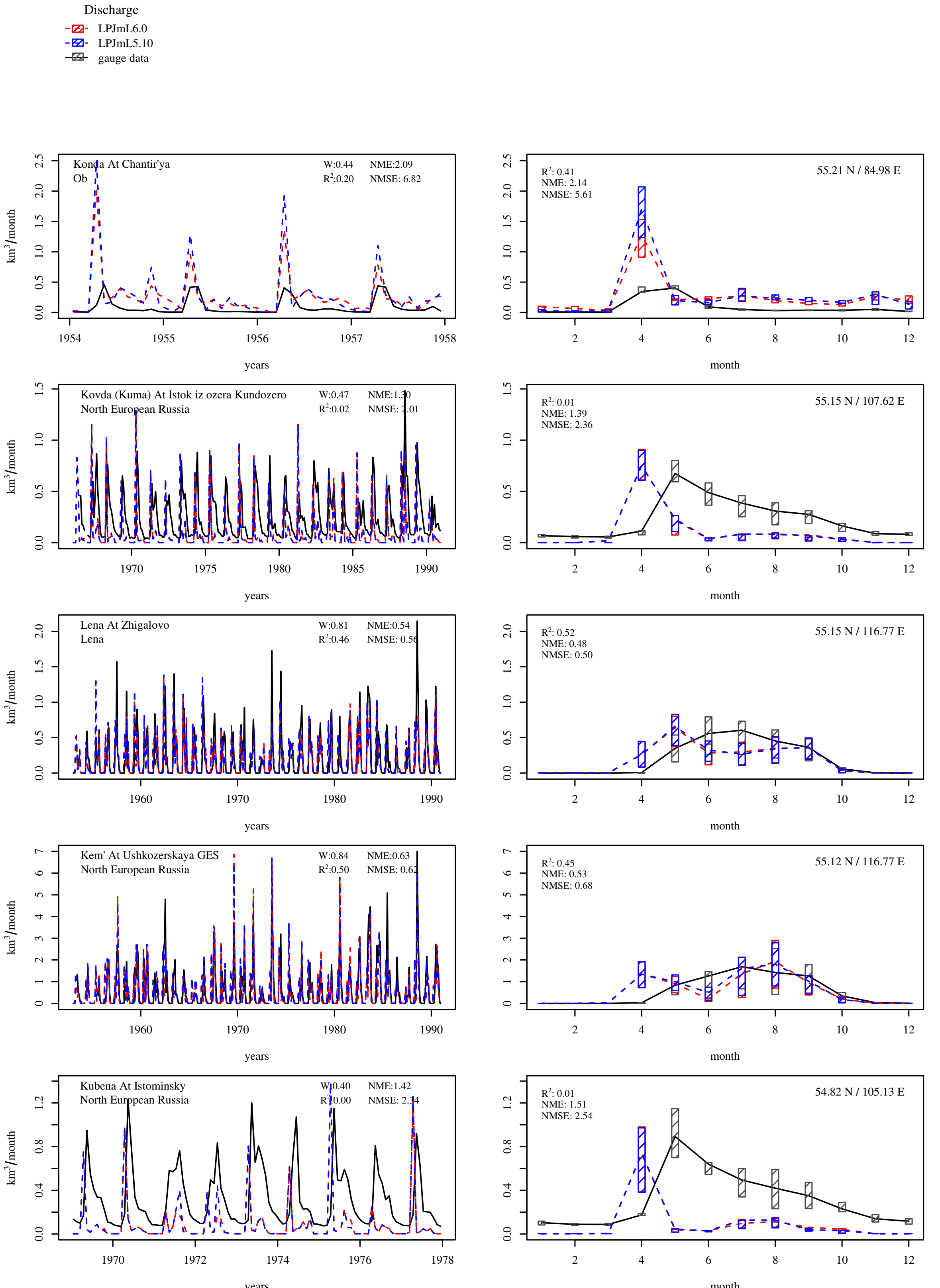

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Biryusa At Shitkino
Yenisei
W:0.41
NME:1.05
R²:0.00
NMSE: 1.77
R²: 0.00
NME: 1.11
NMSE: 1.83
56.42 N / 93.95 E
Taseeva At Mashukovka
Yenisei
W:0.69
NME:0.75
R²:0.23
NMSE: 0.95
R²: 0.25
NME: 0.65
NMSE: 0.90
56.37 N / 98.37 E
Khilok At Maly Kunaley
Yenisei
W:0.31
NME:3.64
R²:0.00
NMSE: 11.02
R²: 0.00
NME: 12.09
NMSE: 121.15
56.28 N / 101.73 E
Lena At Kachug
Lena
W:0.86
NME:0.48
R²:0.60
NMSE: 0.42
R²: 0.59
NME: 0.46
NMSE: 0.45
56.22 N / 115.73 E
Malaya Kuonapka At Dzhalinda
Lena
W:0.42
NME:1.26
R²:0.00
NMSE: 1.85
R²: 0.01
NME: 1.31
NMSE: 1.98
56.17 N / 107.2 E
km³/month
years
month

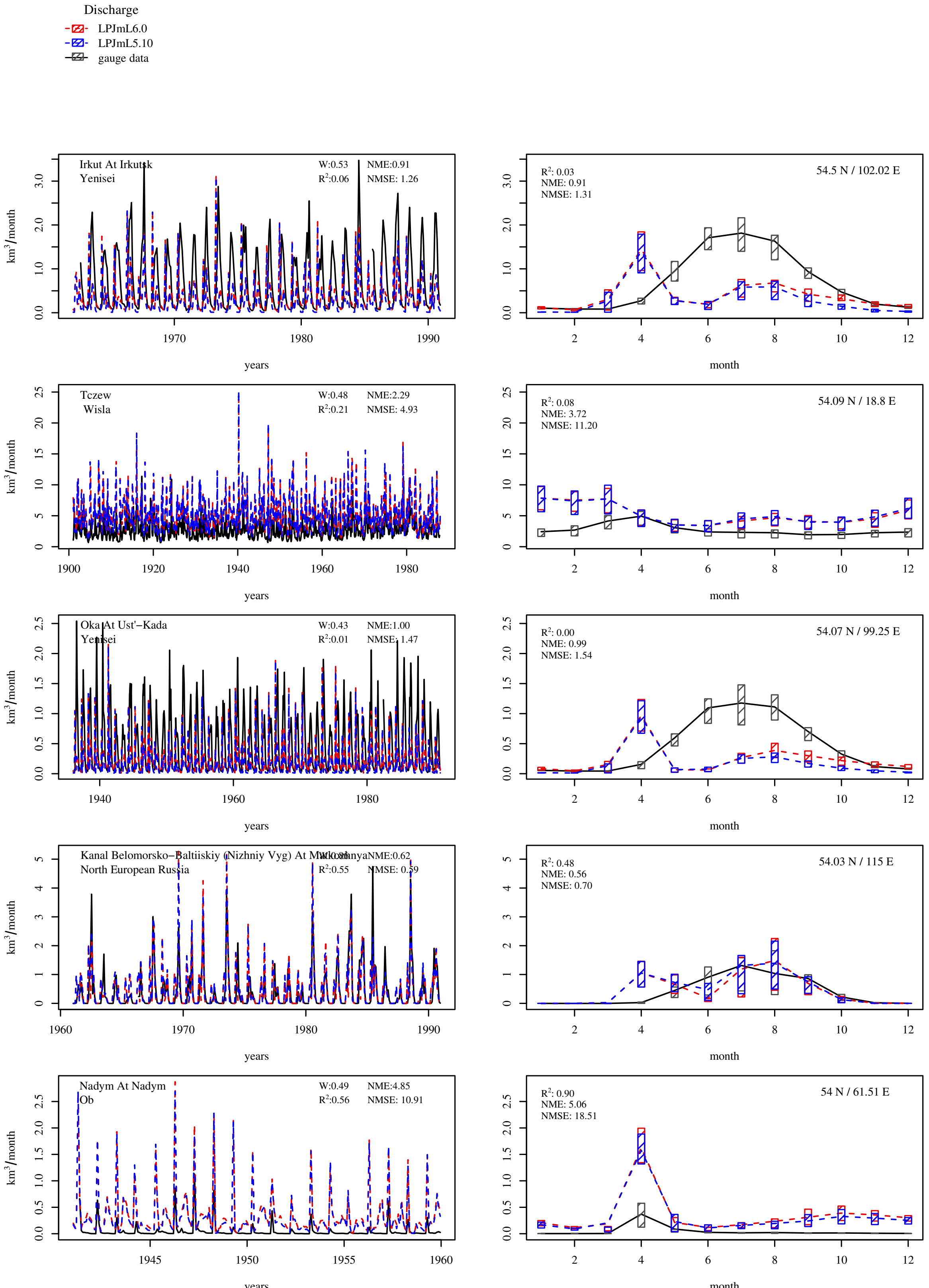

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Vitim At Nerpo
Lena
W:0.30 NME:2.50
R2:0.00 NMSE: 4.17
R2: 0.01
NME: 5.39
NMSE: 26.52
56.12 N / 120.05 W
Biryusa At Biryusinsk
Yenisei
W:0.52 NME:1.15
R2:0.06 NMSE: 1.52
R2: 0.04
NME: 1.16
NMSE: 1.79
55.98 N / 92.8 E
Biryusa At Biryusinsk
Yenisei
W:0.61 NME:0.78
R2:0.12 NMSE: 1.14
R2: 0.10
NME: 0.73
NMSE: 1.17
55.97 N / 97.78 E
Belaya At Mishelevka
Yenisei
W:0.21 NME:1.82
R2:0.00 NMSE: 4.63
R2: 0.00
NME: 1.96
NMSE: 4.99
55.92 N / 104.1 E
Lena At Zmeinovo
Lena
W:0.57 NME:0.73
R2:0.19 NMSE: 0.96
R2: 0.20
NME: 0.72
NMSE: 1.02
55.92 N / 117.53 E
km3/month
years
month



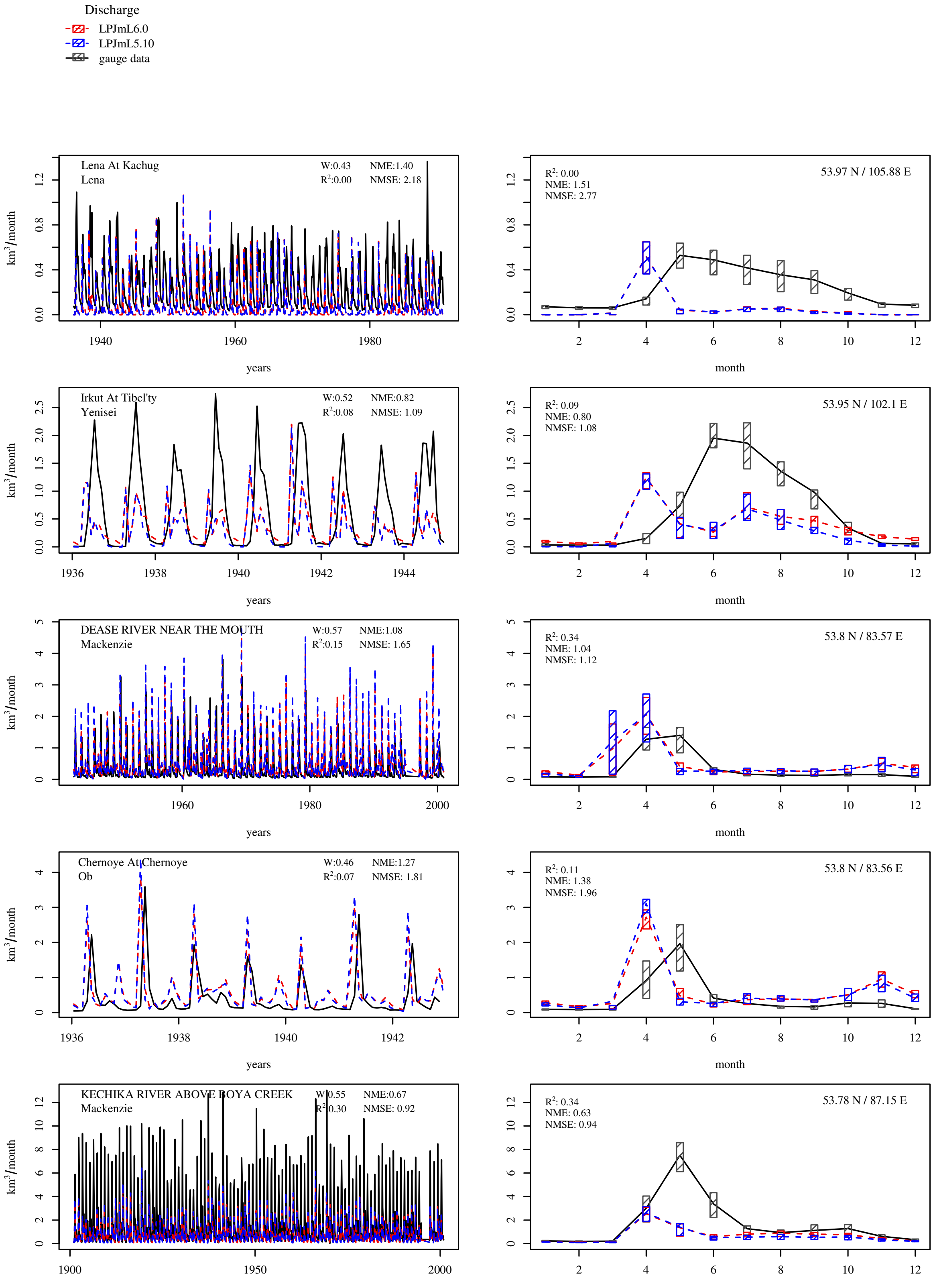
Discharge
LPJmL6.0
LPJmL5.10
gauge data
Verkhnyaya Angara At Verkhnyaya Zaimka
Yenisei
W:0.50 NME:1.11
R²:0.04 NMSE: 1.53
R²: 0.03
NME: 1.12
NMSE: 1.54
55.85 N / 110.15 E
Vitim At Mama
Lena
W:0.29 NME:1.13
R²:0.04 NMSE: 1.75
R²: 0.28
NME: 1.11
NMSE: 1.63
55.72 N / 121.2 W
WINDIGO RIVER ABOVE MUSKRAT DAM LAKE
South and East Hudson Bay
W:0.35 NME:2.46
R²:0.13 NMSE: 9.50
R²: 0.23
NME: 2.45
NMSE: 8.32
55.68 N / 74.33 W
Lena at Krestovskoe
Lena
W:0.78 NME:0.62
R²:0.45 NMSE: 0.65
R²: 0.78
NME: 0.57
NMSE: 0.48
55.58 N / 114.5 E
Chadobets At Yarkino
Yenisei
W:0.67 NME:0.69
R²:0.24 NMSE: 0.94
R²: 0.30
NME: 0.62
NMSE: 0.88
55.53 N / 97.83 E
km³/month
years
month

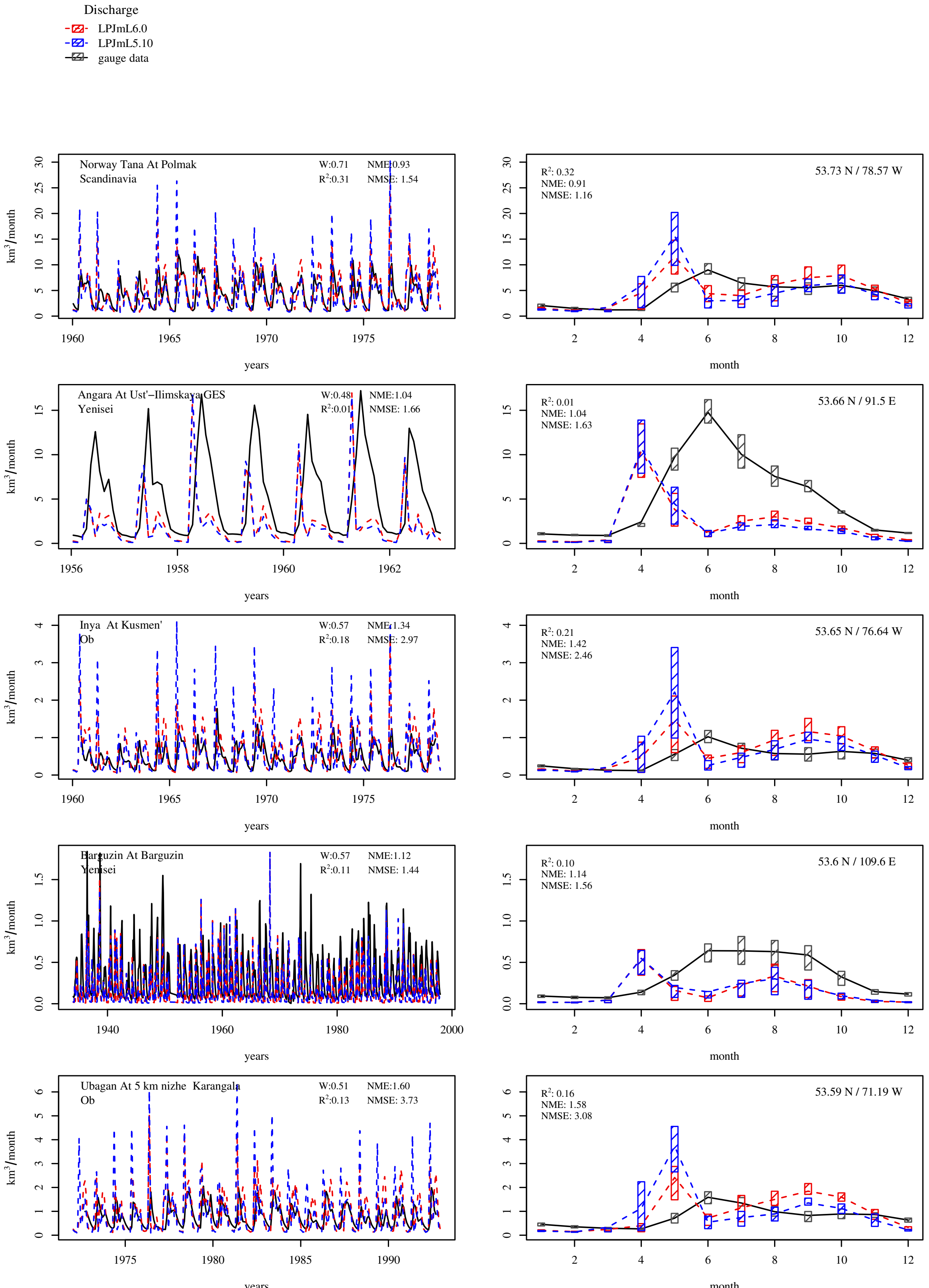

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Biryusa At Solyanaya
Yenisei
W:0.52 NME:1.21
R²:0.05 NMSE: 1.60
km³/month
years
R²: 0.04
NME: 1.22
NMSE: 1.91
55.47 N / 92.35 E
month
Nalgekhe At Nelgekhe
Lena
W:0.37 NME:1.78
R²:0.02 NMSE: 3.84
R²: 0.08
NME: 1.90
NMSE: 3.66
55.45 N / 117.16 W
Ilim At Kochenga
Yenisei
W:0.82 NME:0.59
R²:0.45 NMSE: 0.73
R²: 0.52
NME: 0.45
NMSE: 0.56
55.43 N / 99.42 E
Kirenga At Karam
Lena
W:0.75 NME:0.61
R²:0.36 NMSE: 0.68
R²: 0.33
NME: 0.57
NMSE: 0.74
55.42 N / 120.55 E
Konda At Bol'chary
Ob
W:0.65 NME:0.68
R²:0.30 NMSE: 0.71
R²: 0.33
NME: 0.63
NMSE: 0.68
55.38 N / 86.08 E

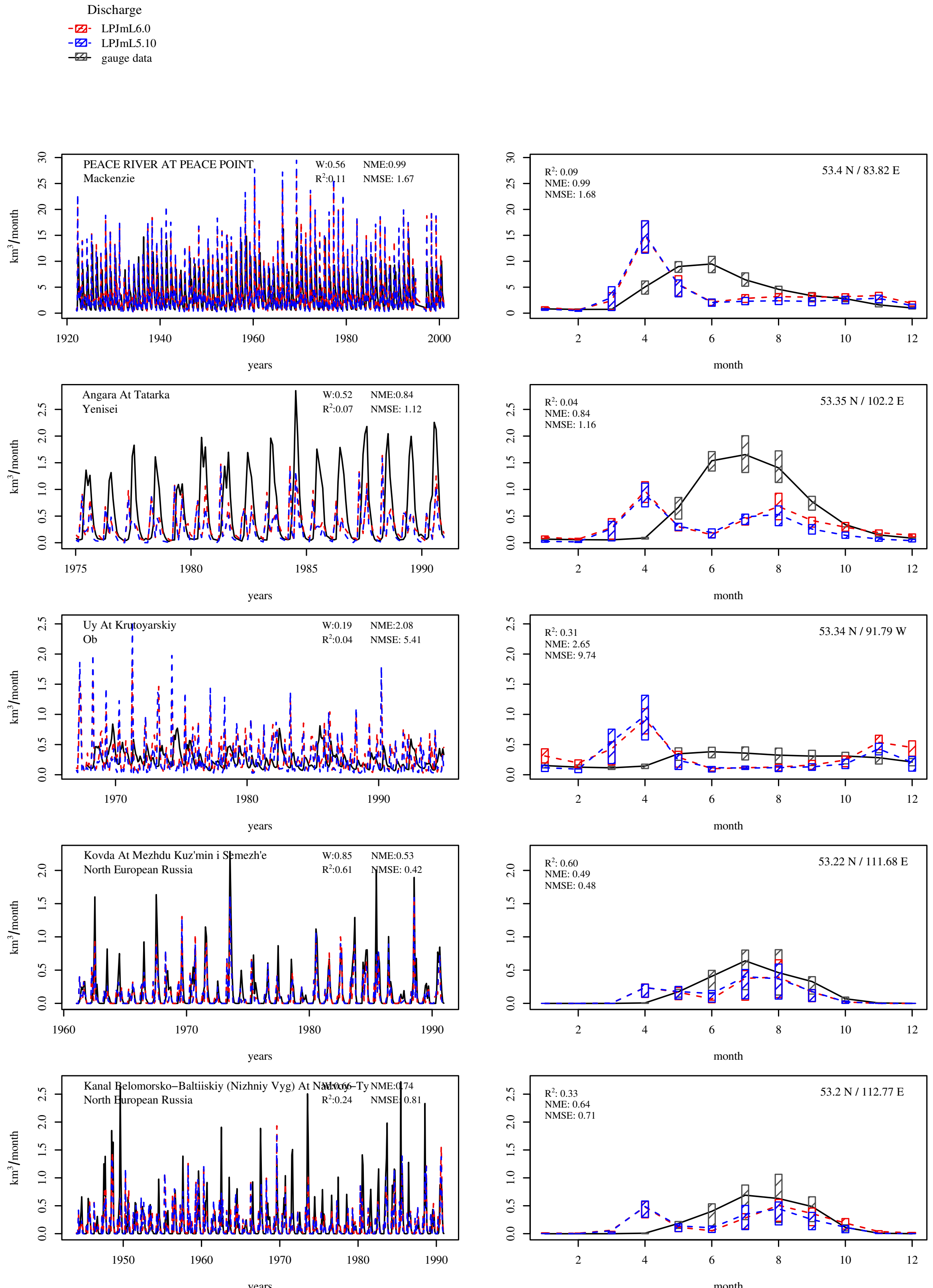

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Konda At Chantir'ya
Ob
W:0.44 NME:2.09
R²:0.20 NMSE: 6.82
R²: 0.41
NME: 2.14
NMSE: 5.61
55.21 N / 84.98 E
Kovda (Kuma) At Istok iz ozera Kundozero
North European Russia
W:0.47
R²:0.02
R²: 0.01
NME: 1.39
NMSE: 2.36
55.15 N / 107.62 E
Lena At Zhigalovo
Lena
W:0.81 NME:0.54
R²:0.46
R²: 0.52
NME: 0.48
NMSE: 0.50
55.15 N / 116.77 E
Kem' At Ushkozerskaya GES
North European Russia
W:0.84 NME:0.63
R²:0.50
R²: 0.45
NME: 0.53
NMSE: 0.68
55.12 N / 116.77 E
Kubena At Istominsky
North European Russia
NME:1.42
R²: 0.01
NME: 1.51
NMSE: 2.54
54.82 N / 105.13 E
km³/month
years
month

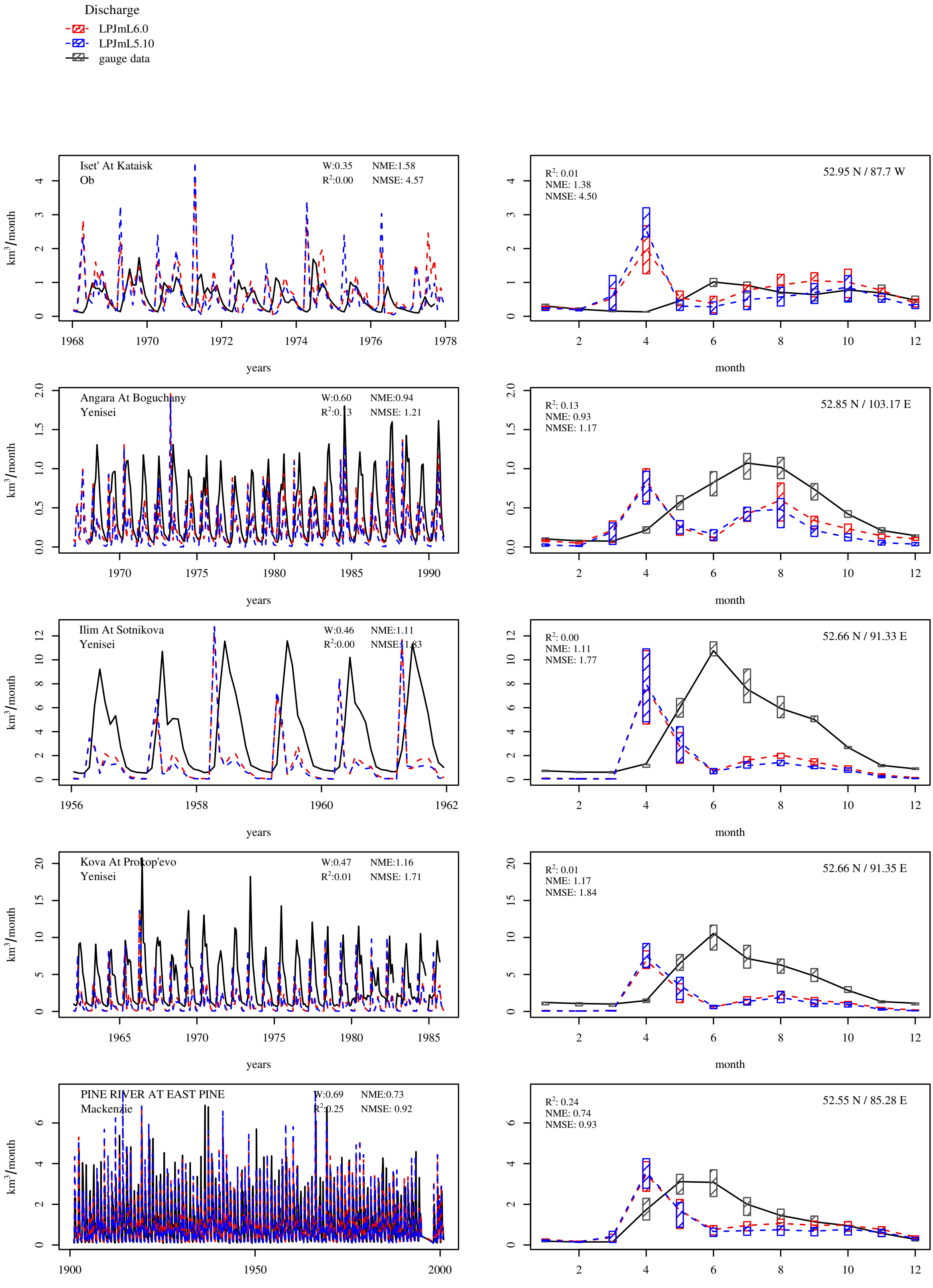


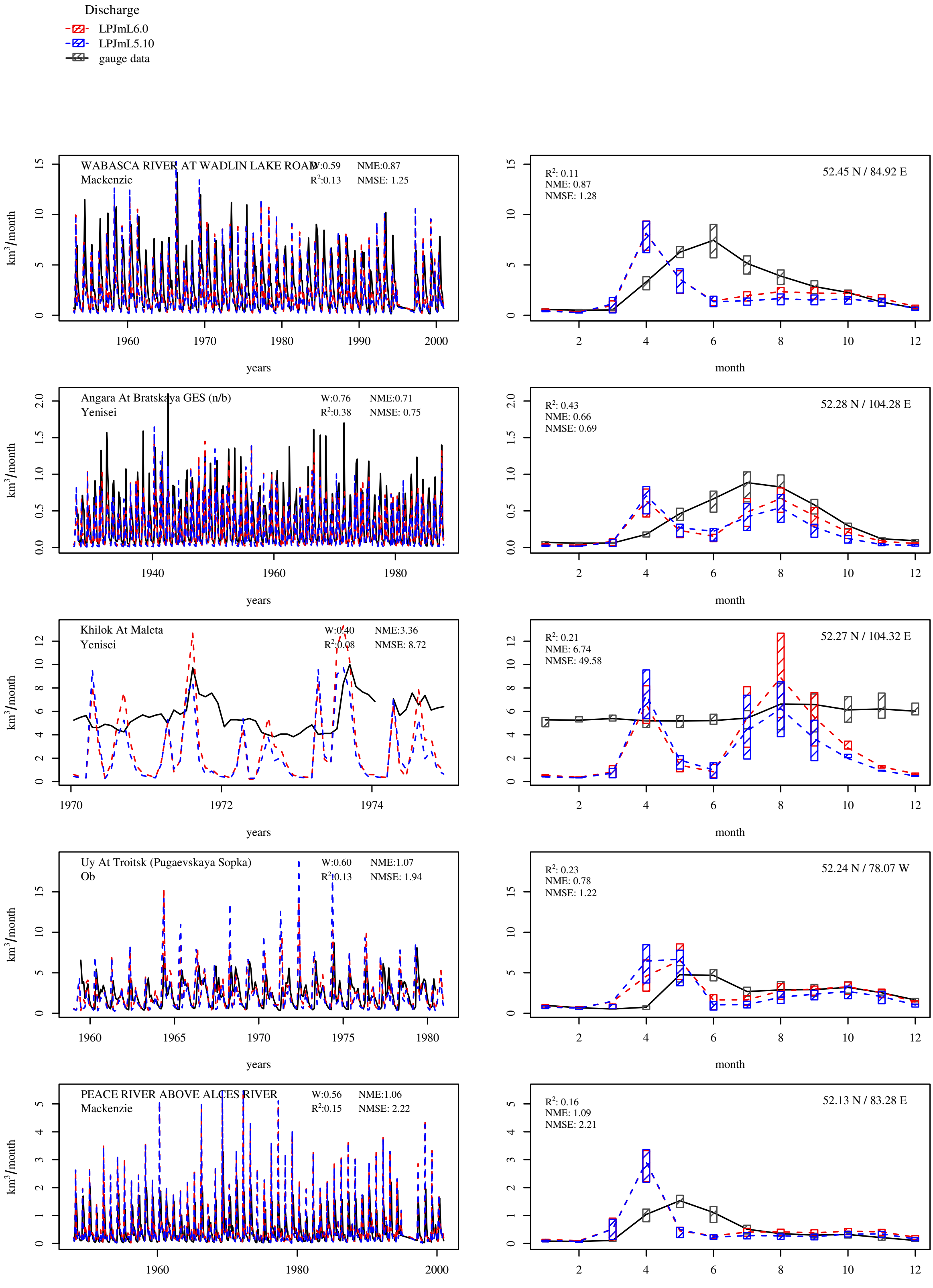
Discharge
LPJmL6.0
LPJmL5.10
gauge data
Irkut At Irkutsk
Yenisei
W:0.53 NME:0.91
R²:0.06 NMSE: 1.26
R²: 0.03
NME: 0.91
NMSE: 1.31
54.5 N / 102.02 E
Tczew
Wisla
W:0.48 NME:2.29
R²:0.21 NMSE: 4.93
R²: 0.08
NME: 3.72
NMSE: 11.20
54.09 N / 18.8 E
Oka At Ust'−Kada
Yenisei
W:0.43 NME:1.00
R²:0.01 NMSE: 1.47
R²: 0.00
NME: 0.99
NMSE: 1.54
54.07 N / 99.25 E
Kanal Belomorsko−Baltiiskiy (Nizhniy Vyg) At Matkozhnya
North European Russia
W:0.58 NME:0.62
R²:0.55 NMSE: 0.59
R²: 0.48
NME: 0.56
NMSE: 0.70
54.03 N / 115 E
Nadym At Nadym
Ob
W:0.49 NME:4.85
R²:0.56 NMSE: 10.91
R²: 0.90
NME: 5.06
NMSE: 18.51
54 N / 61.51 E
km³/month
years
month

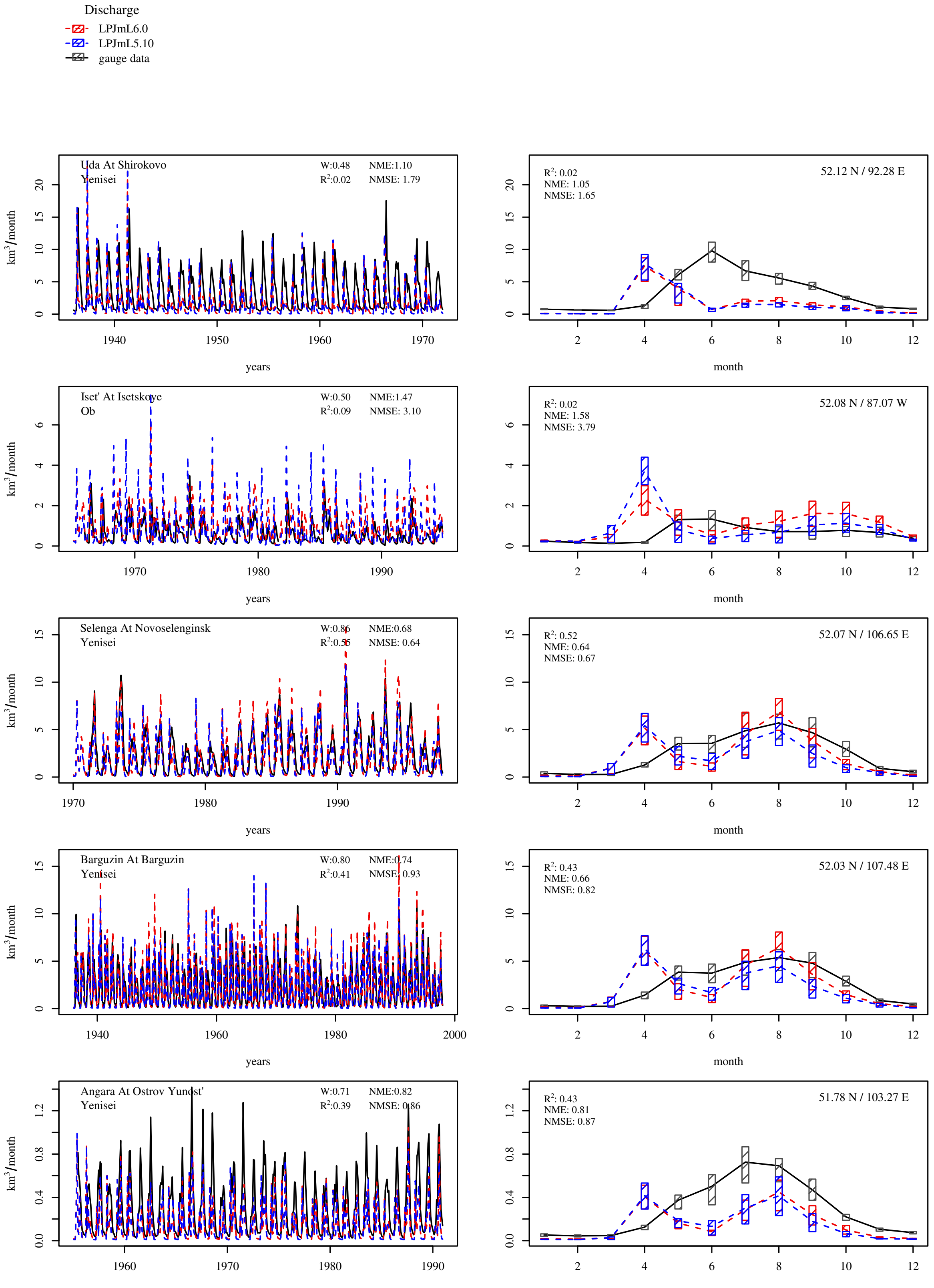

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Lena At Kachug
Lena
W:0.43
NME:1.40
R²:0.00
NMSE: 2.18
R²: 0.00
NME: 1.51
NMSE: 2.77
53.97 N / 105.88 E
Irkut At Tibel'ty
Yenisei
W:0.52
NME:0.82
R²:0.08
NMSE: 1.09
R²: 0.09
NME: 0.80
NMSE: 1.08
53.95 N / 102.1 E
DEASE RIVER NEAR THE MOUTH
Mackenzie
W:0.57
NME:1.08
R²:0.15
NMSE: 1.65
R²: 0.34
NME: 1.04
NMSE: 1.12
53.8 N / 83.57 E
Chernoye At Chernoye
Ob
W:0.46
NME:1.27
R²:0.07
NMSE: 1.81
R²: 0.11
NME: 1.38
NMSE: 1.96
53.8 N / 83.56 E
KECHIKA RIVER ABOVE BOYA CREEK
Mackenzie
W:0.55
NME:0.67
R²:0.30
NMSE: 0.92
R²: 0.34
NME: 0.63
NMSE: 0.94
53.78 N / 87.15 E
km³/month
years
month

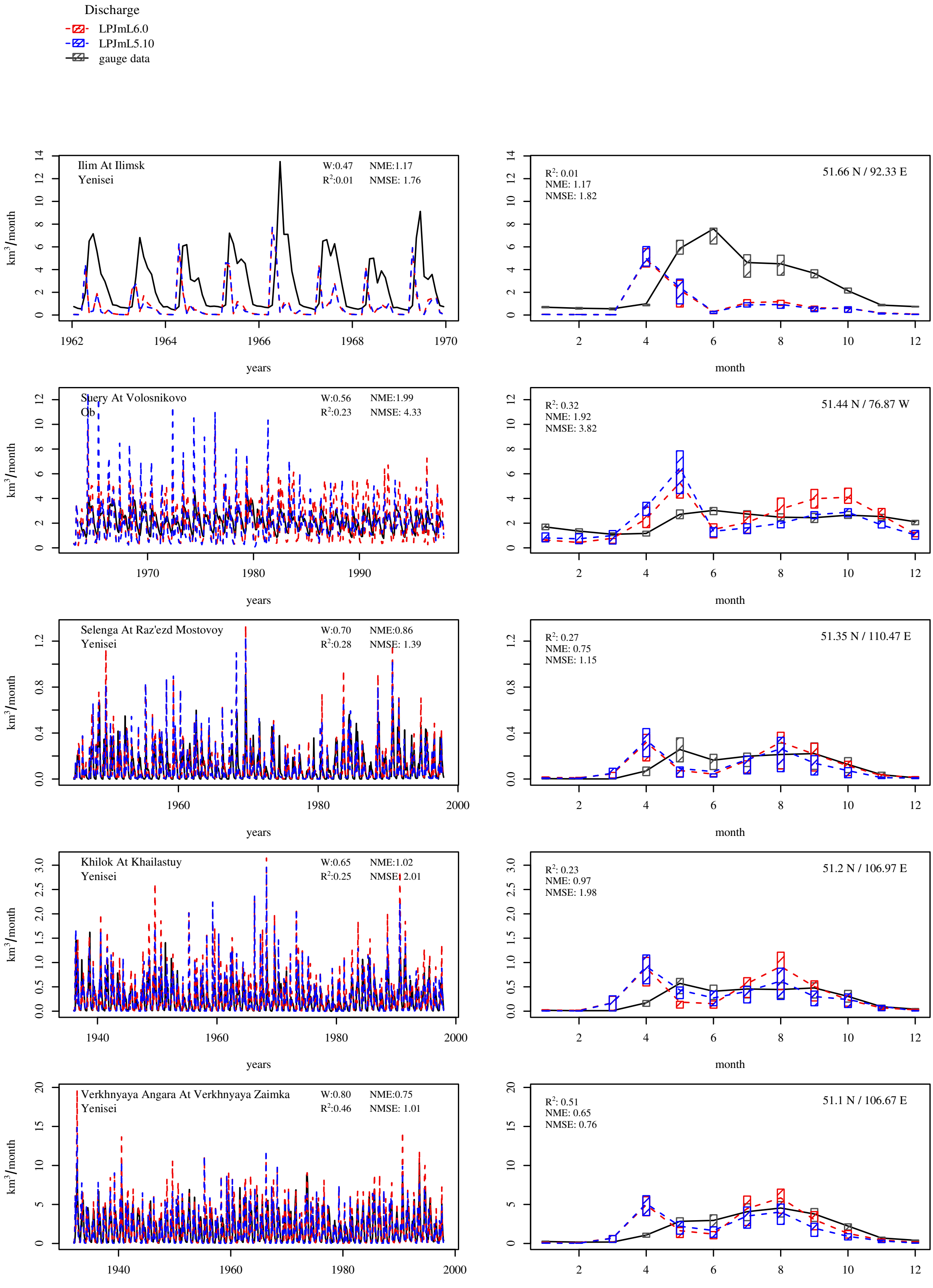

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Norway Tana At Polmak
Scandinavia
W:0.71 NME:0.93
R²:0.31 NMSE: 1.54
R²: 0.32
NME: 0.91
NMSE: 1.16
53.73 N / 78.57 W
Angara At Ust'−Ilimskaya GES
Yenisei
W:0.48 NME:1.04
R²:0.01 NMSE: 1.66
R²: 0.01
NME: 1.04
NMSE: 1.63
53.66 N / 91.5 E
Inya At Kusmen'
Ob
W:0.57 NME:1.34
R²:0.18 NMSE: 2.97
R²: 0.21
NME: 1.42
NMSE: 2.46
53.65 N / 76.64 W
Barguzin At Barguzin
Yenisei
W:0.57 NME:1.12
R²:0.11 NMSE: 1.44
R²: 0.10
NME: 1.14
NMSE: 1.56
53.6 N / 109.6 E
Ubagan At 5 km nizhe Karangala
Ob
W:0.51 NME:1.60
R²:0.13 NMSE: 3.73
R²: 0.16
NME: 1.58
NMSE: 3.08
53.59 N / 71.19 W
km³/month
years
month

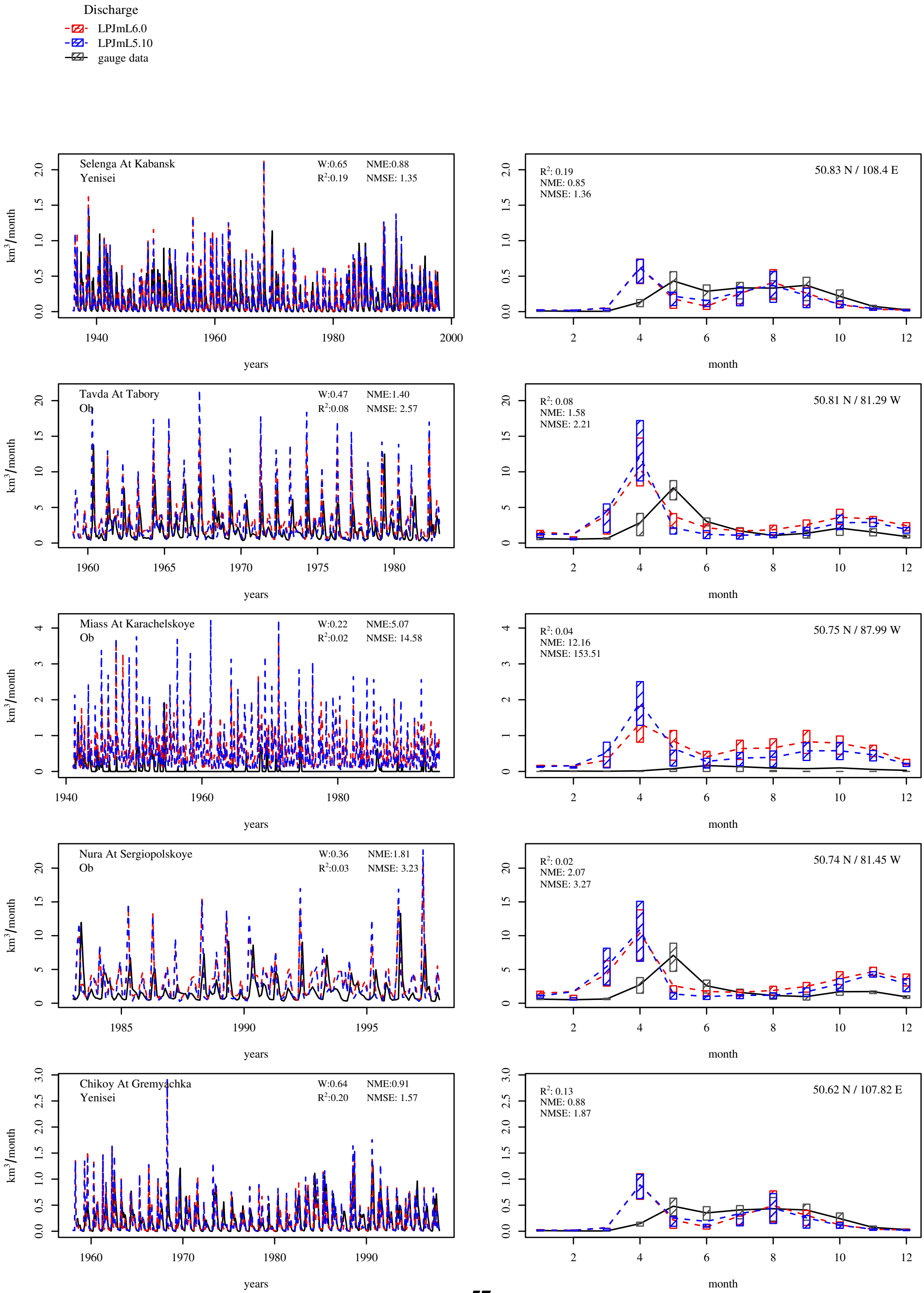

Discharge
LPJmL6.0
LPJmL5.10
gauge data
PEACE RIVER AT PEACE POINT
Mackenzie
W:0.56 NME:0.99
R²:0.11 NMSE: 1.67
km³/month
years
R²: 0.09
NME: 0.99
NMSE: 1.68
53.4 N / 83.82 E
month
Angara At Tatarka
Yenisei
W:0.52 NME:0.84
R²:0.07 NMSE: 1.12
R²: 0.04
NME: 0.84
NMSE: 1.16
53.35 N / 102.2 E
Uy At Krutoyarskiy
Ob
W:0.19 NME:2.08
R²:0.04 NMSE: 5.41
R²: 0.31
NME: 2.65
NMSE: 9.74
53.34 N / 91.79 W
Kovda At Mezhdu Kuz'min i Semezh'e
North European Russia
W:0.85 NME:0.53
R²:0.61 NMSE: 0.42
R²: 0.60
NME: 0.49
NMSE: 0.48
53.22 N / 111.68 E
Kanal Belomorsko–Baltiiskiy (Nizhniy Vyg) At Nadvoitsy
North European Russia
W:0.66 NME:0.74
R²:0.24 NMSE: 0.81
R²: 0.33
NME: 0.64
NMSE: 0.71
53.2 N / 112.77 E

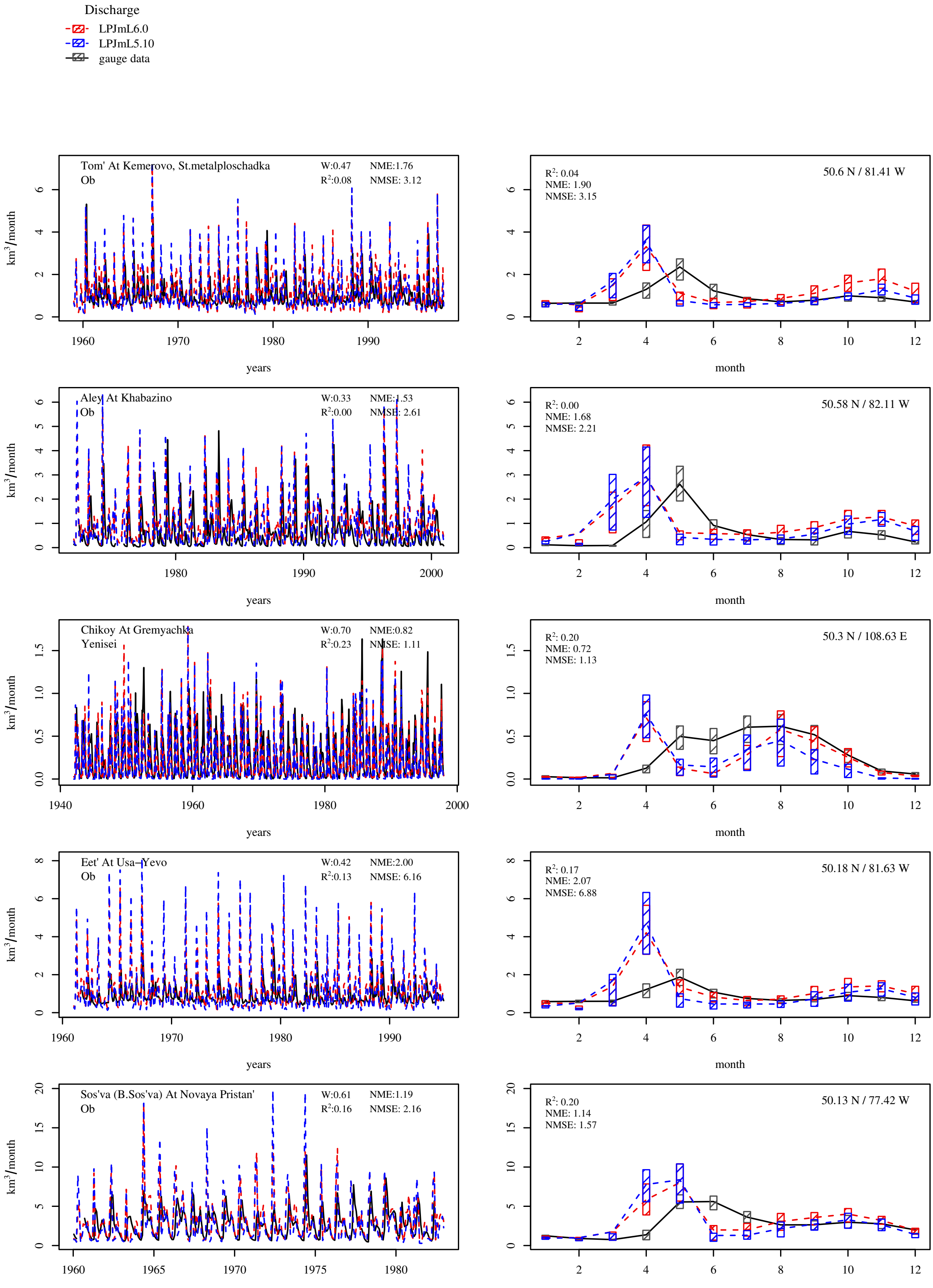

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Iset' At Kataisk
Ob
W:0.35 NME:1.58
R²:0.00 NMSE: 4.57
R²: 0.01
NME: 1.38
NMSE: 4.50
52.95 N / 87.7 W
Angara At Boguchany
Yenisei
W:0.60 NME:0.94
NMSE: 1.21
R²: 0.13
NME: 0.93
NMSE: 1.17
52.85 N / 103.17 E
Ilim At Sotnikova
Yenisei
W:0.46 NME:1.11
R²:0.00
R²: 0.00
NME: 1.11
NMSE: 1.77
52.66 N / 91.33 E
Kova At Prokop'evo
Yenisei
W:0.47 NME:1.16
R²:0.01 NMSE: 1.71
R²: 0.01
NME: 1.17
NMSE: 1.84
52.66 N / 91.35 E
PINE RIVER AT EAST PINE
Mackenzie
W:0.69 NME:0.73
R²:0.25 NMSE: 0.92
R²: 0.24
NME: 0.74
NMSE: 0.93
52.55 N / 85.28 E
km³/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
WABASCA RIVER AT WADLIN LAKE ROAD
Mackenzie
W:0.59 NME:0.87
R²:0.13 NMSE: 1.25
R²: 0.11
NME: 0.87
NMSE: 1.28
52.45 N / 84.92 E
Angara At Bratskaya GES (n/b)
Yenisei
W:0.76 NME:0.71
R²:0.38 NMSE: 0.75
R²: 0.43
NME: 0.66
NMSE: 0.69
52.28 N / 104.28 E
Khilok At Maleta
Yenisei
W:0.40 NME:3.36
R²:0.08 NMSE: 8.72
R²: 0.21
NME: 6.74
NMSE: 49.58
52.27 N / 104.32 E
Uy At Troitsk (Pugaevskaya Sopka)
Ob
W:0.60 NME:1.07
R²:0.13 NMSE: 1.94
R²: 0.23
NME: 0.78
NMSE: 1.22
52.24 N / 78.07 W
PEACE RIVER ABOVE ALCES RIVER
Mackenzie
W:0.56 NME:1.06
R²:0.15 NMSE: 2.22
R²: 0.16
NME: 1.09
NMSE: 2.21
52.13 N / 83.28 E
km³/month
years
month

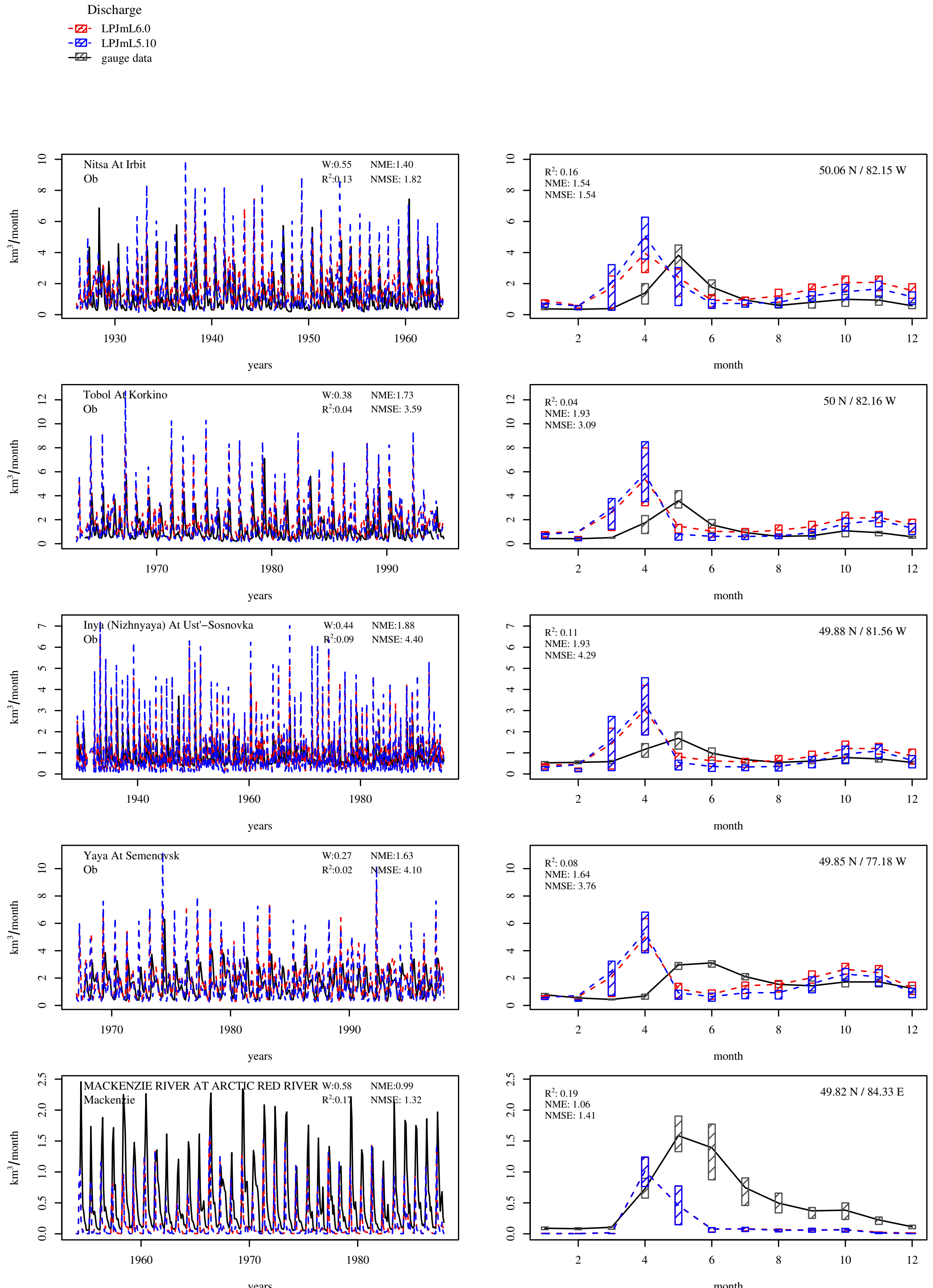

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Uda At Shirokovo
Yenisei
W:0.48 NME:1.10
R2:0.02 NMSE: 1.79
R2: 0.02
NME: 1.05
NMSE: 1.65
52.12 N / 92.28 E
Iset' At Isetskoye
Ob
W:0.50 NME:1.47
R2:0.09 NMSE: 3.10
R2: 0.02
NME: 1.58
NMSE: 3.79
52.08 N / 87.07 W
Selenga At Novoselenginsk
Yenisei
W:0.86 NME:0.68
R2:0.55 NMSE: 0.64
R2: 0.52
NME: 0.64
NMSE: 0.67
52.07 N / 106.65 E
Barguzin At Barguzin
Yenisei
W:0.80 NME:0.74
R2:0.41 NMSE: 0.93
R2: 0.43
NME: 0.66
NMSE: 0.82
52.03 N / 107.48 E
Angara At Ostrov Yunost'
Yenisei
W:0.71 NME:0.82
R2:0.39 NMSE: 0.86
R2: 0.43
NME: 0.81
NMSE: 0.87
51.78 N / 103.27 E
km3/month
years
month

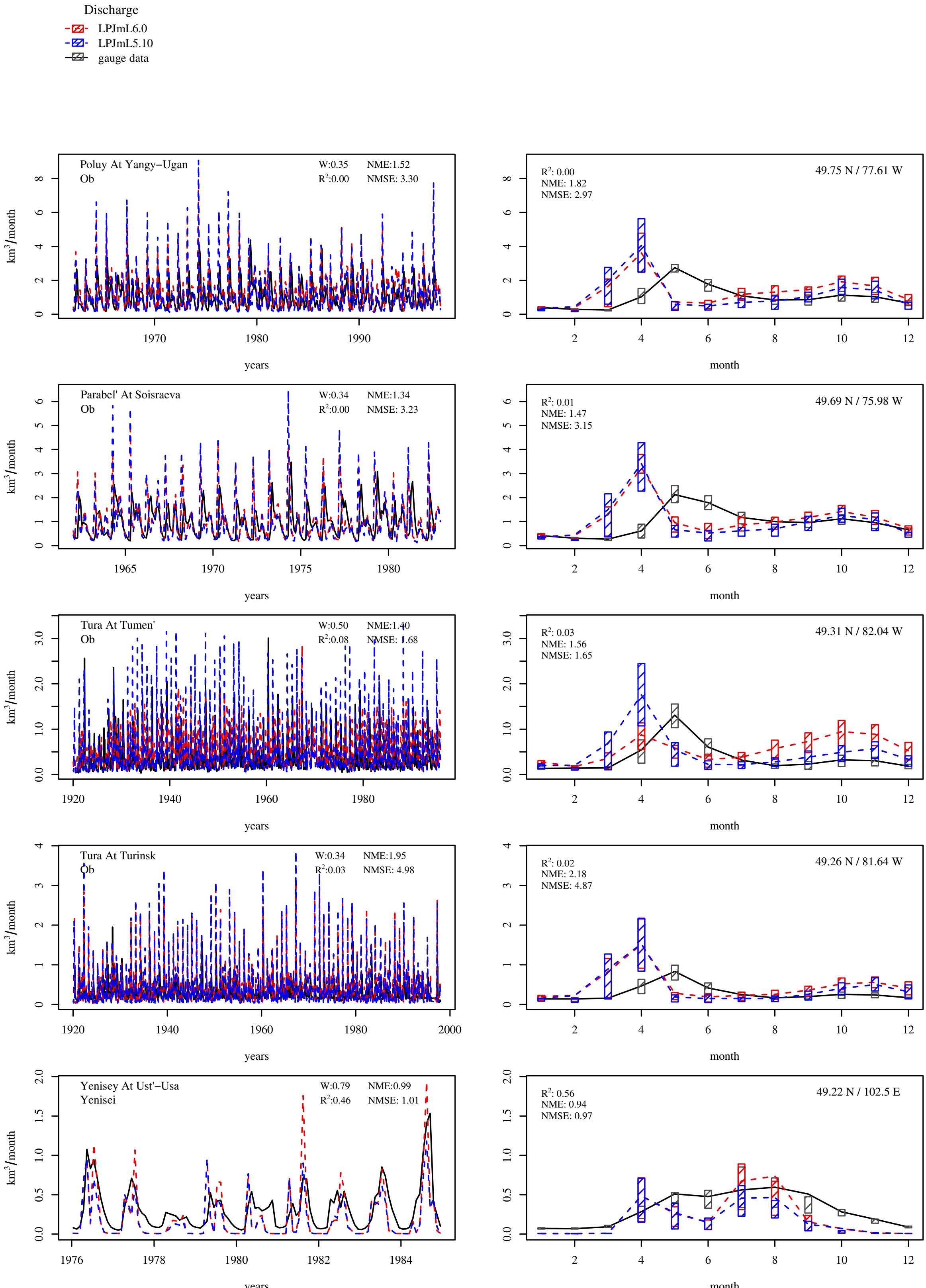

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Ilim At Ilimsk
Yenisei
W:0.47 NME:1.17
R²:0.01 NMSE: 1.76
R²: 0.01
NME: 1.17
NMSE: 1.82
51.66 N / 92.33 E
Suery At Volosnikovo
Ob
W:0.56 NME:1.99
R²:0.23 NMSE: 4.33
R²: 0.32
NME: 1.92
NMSE: 3.82
51.44 N / 76.87 W
Selenga At Raz'ezd Mostovoy
Yenisei
W:0.70 NME:0.86
R²:0.28 NMSE: 1.39
R²: 0.27
NME: 0.75
NMSE: 1.15
51.35 N / 110.47 E
Khilok At Khailastuy
Yenisei
W:0.65 NME:1.02
R²:0.25 NMSE: 2.01
R²: 0.23
NME: 0.97
NMSE: 1.98
51.2 N / 106.97 E
Verkhnyaya Angara At Verkhnyaya Zaimka
Yenisei
W:0.80 NME:0.75
R²:0.46 NMSE: 1.01
R²: 0.51
NME: 0.65
NMSE: 0.76
51.1 N / 106.67 E
km³/month
years
month

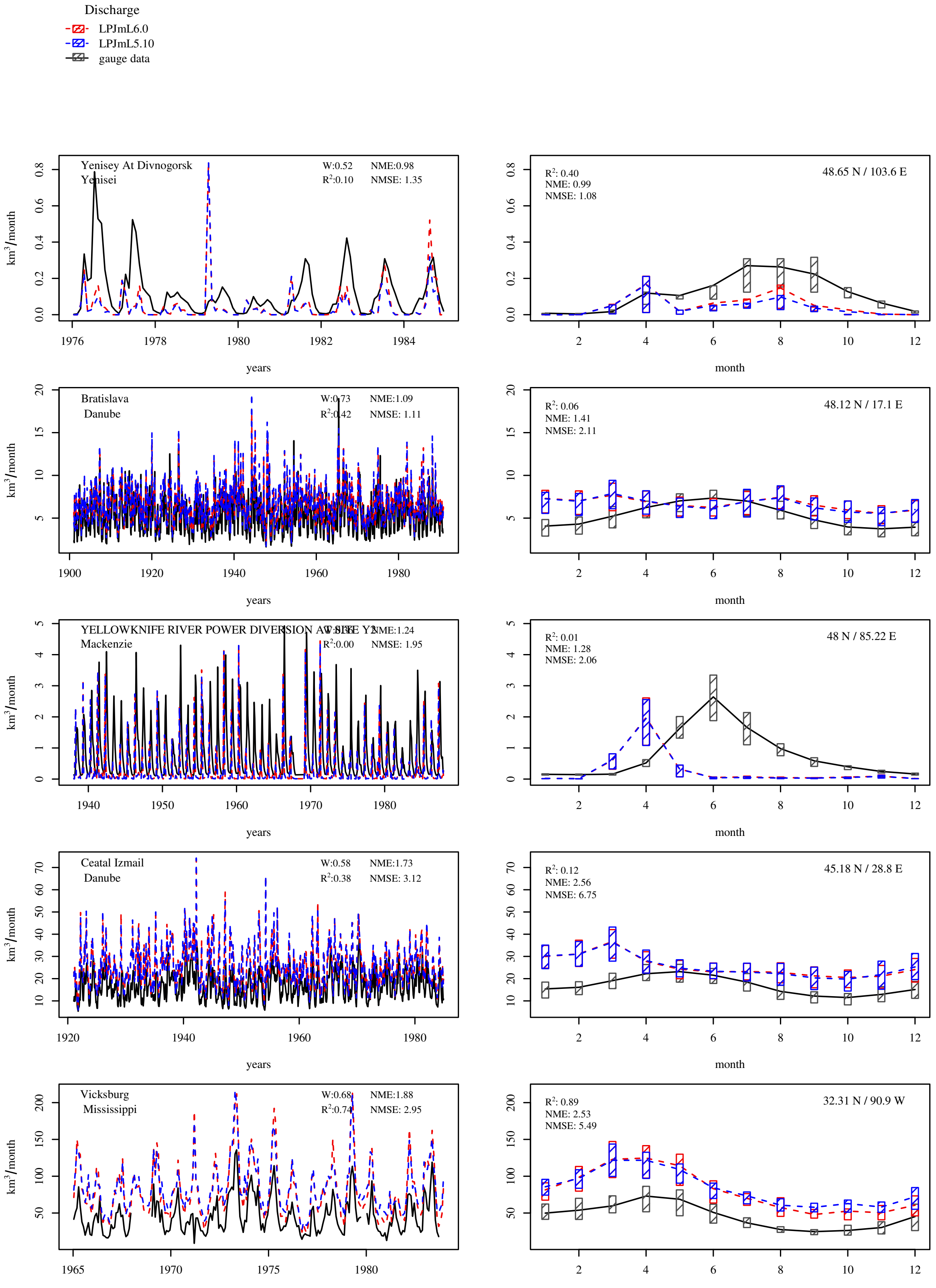

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Selenga At Kabansk
Yenisei
W:0.65 NME:0.88
R²:0.19 NMSE: 1.35
R²: 0.19
NME: 0.85
NMSE: 1.36
50.83 N / 108.4 E
Tavda At Tabory
Ob
W:0.47 NME:1.40
R²:0.08 NMSE: 2.57
R²: 0.08
NME: 1.58
NMSE: 2.21
50.81 N / 81.29 W
Miass At Karachelskoye
Ob
W:0.22 NME:5.07
R²:0.02 NMSE: 14.58
R²: 0.04
NME: 12.16
NMSE: 153.51
50.75 N / 87.99 W
Nura At Sergiopolskoye
Ob
W:0.36 NME:1.81
R²:0.03 NMSE: 3.23
R²: 0.02
NME: 2.07
NMSE: 3.27
50.74 N / 81.45 W
Chikoy At Gremyachka
Yenisei
W:0.64 NME:0.91
R²:0.20 NMSE: 1.57
R²: 0.13
NME: 0.88
NMSE: 1.87
50.62 N / 107.82 E
km³/month
years
month

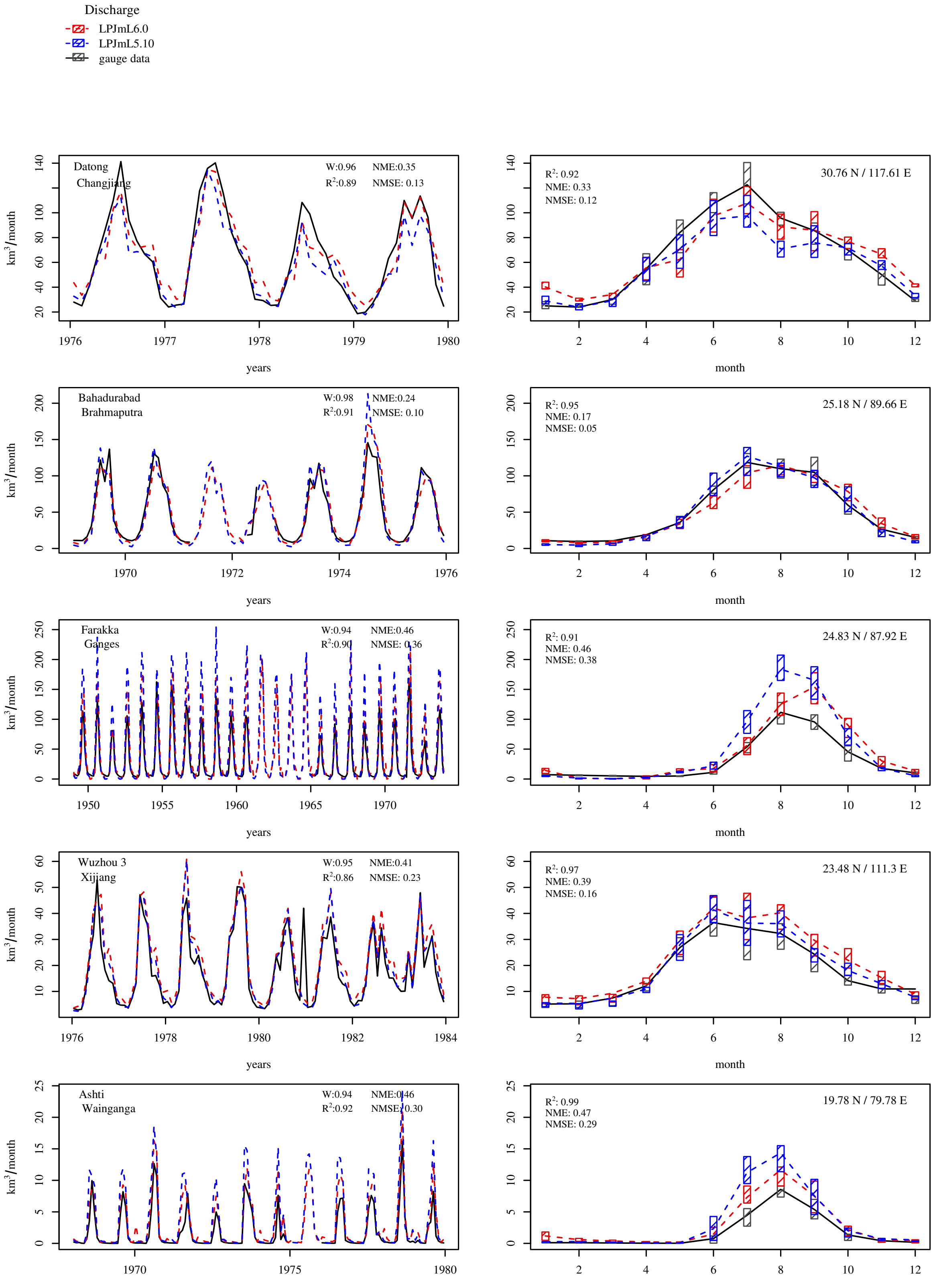

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Tom' At Kemerovo, St.metalploschadka
Ob
W:0.47
NME:1.76
R²:0.08
NMSE: 3.12
R²: 0.04
NME: 1.90
NMSE: 3.15
50.6 N / 81.41 W
Aley At Khabazino
Ob
W:0.33
NME:1.53
R²:0.00
NMSE: 2.61
R²: 0.00
NME: 1.68
NMSE: 2.21
50.58 N / 82.11 W
Chikoy At Gremyachka
Yenisei
W:0.70
NME:0.82
R²:0.23
NMSE: 1.11
R²: 0.20
NME: 0.72
NMSE: 1.13
50.3 N / 108.63 E
Eet' At Usa–Yevo
Ob
W:0.42
NME:2.00
R²:0.13
NMSE: 6.16
R²: 0.17
NME: 2.07
NMSE: 6.88
50.18 N / 81.63 W
Sos'va (B.Sos'va) At Novaya Pristan'
Ob
W:0.61
NME:1.19
R²:0.16
NMSE: 2.16
R²: 0.20
NME: 1.14
NMSE: 1.57
50.13 N / 77.42 W
km³/month
years
month

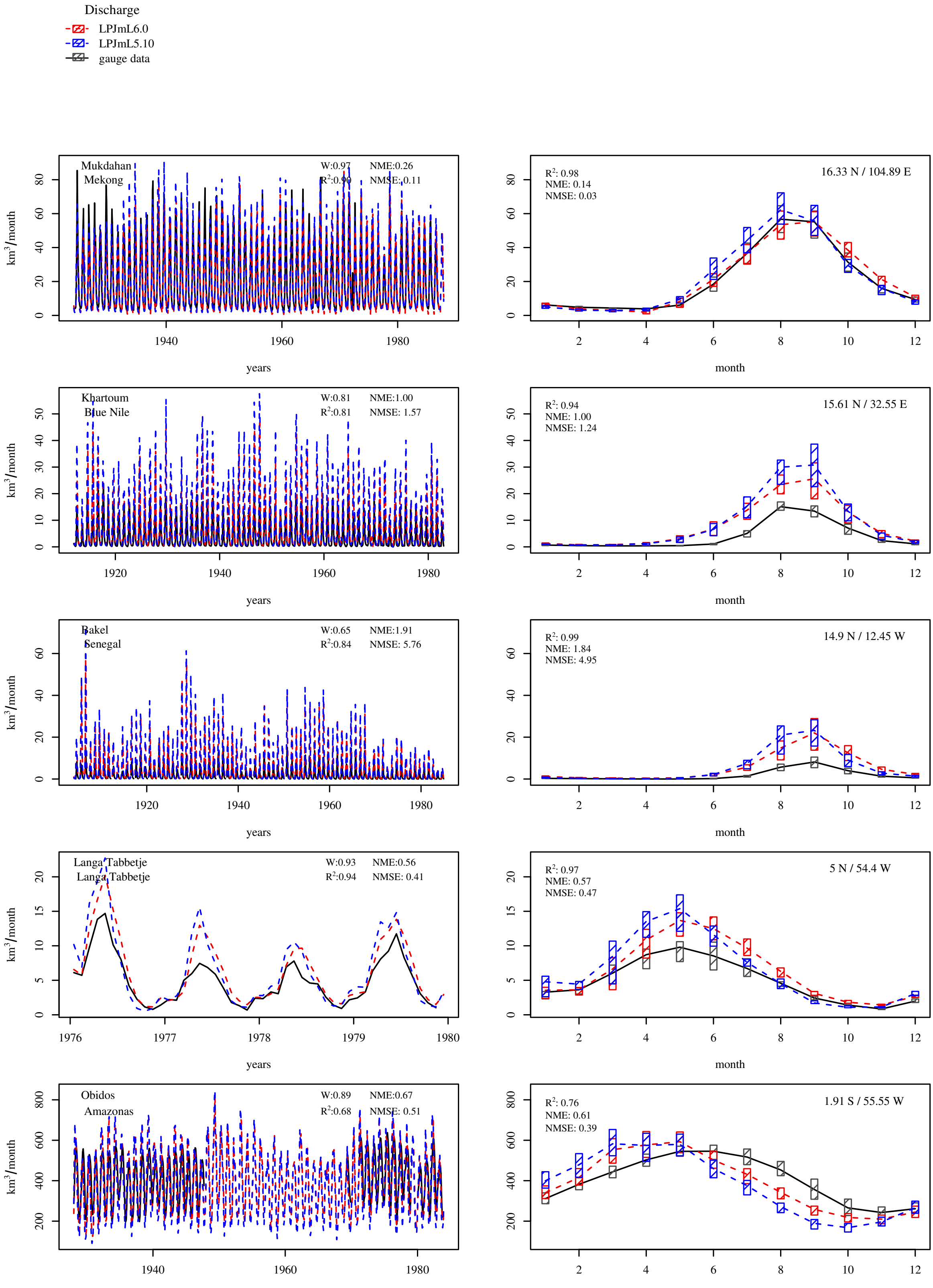
75

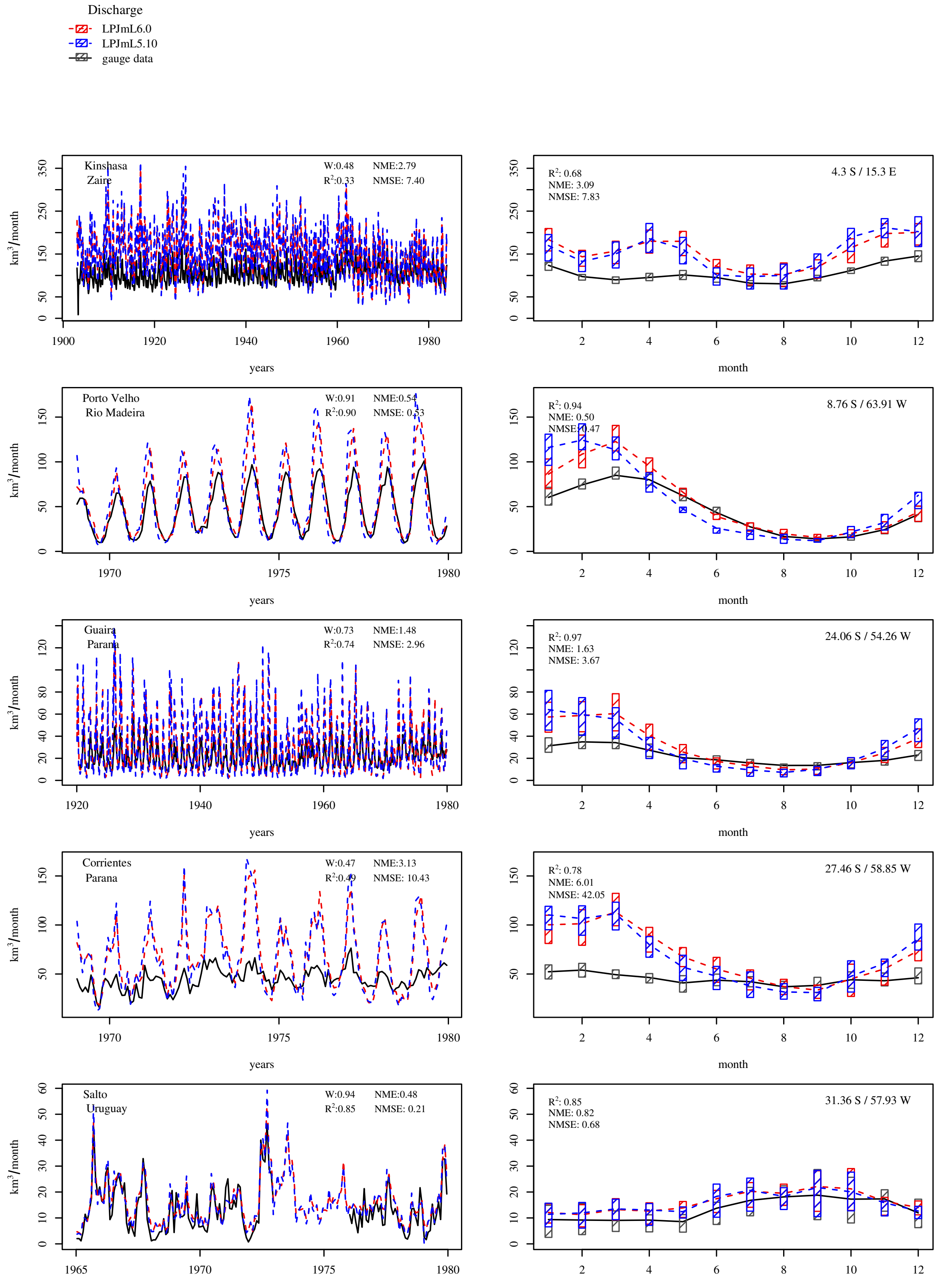

Discharge
LPJmL6.0
LPJmL5.10
gauge data
Nitsa At Irbit
Ob
W:0.55 NME:1.40
R²:0.13 NMSE: 1.82
R²: 0.16
NME: 1.54
NMSE: 1.54
50.06 N / 82.15 W
Tobol At Korkino
Ob
W:0.38 NME:1.73
R²:0.04 NMSE: 3.59
R²: 0.04
NME: 1.93
NMSE: 3.09
50 N / 82.16 W
Inya (Nizhnyaya) At Ust'−Sosnovka
Ob
W:0.44 NME:1.88
R²:0.09 NMSE: 4.40
R²: 0.11
NME: 1.93
NMSE: 4.29
49.88 N / 81.56 W
Yaya At Semenovsk
Ob
W:0.27 NME:1.63
R²:0.02 NMSE: 4.10
R²: 0.08
NME: 1.64
NMSE: 3.76
49.85 N / 77.18 W
MACKENZIE RIVER AT ARCTIC RED RIVER
Mackenzie
W:0.58 NME:0.99
R²:0.17 NMSE: 1.32
R²: 0.19
NME: 1.06
NMSE: 1.41
49.82 N / 84.33 E
km³/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Poluy At Yangy−Ugan
Ob
W:0.35
NME:1.52
R²:0.00
NMSE: 3.30
R²: 0.00
NME: 1.82
NMSE: 2.97
49.75 N / 77.61 W
Parabel' At Soisraeva
Ob
W:0.34
NME:1.34
R²:0.00
NMSE: 3.23
R²: 0.01
NME: 1.47
NMSE: 3.15
49.69 N / 75.98 W
Tura At Tumen'
Ob
W:0.50
NME:1.40
R²:0.08
NMSE: 1.68
R²: 0.03
NME: 1.56
NMSE: 1.65
49.31 N / 82.04 W
Tura At Turinsk
Ob
W:0.34
NME:1.95
R²:0.03
NMSE: 4.98
R²: 0.02
NME: 2.18
NMSE: 4.87
49.26 N / 81.64 W
Yenisey At Ust'−Usa
Yenisei
W:0.79
NME:0.99
R²:0.46
NMSE: 1.01
R²: 0.56
NME: 0.94
NMSE: 0.97
49.22 N / 102.5 E
km³/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Yenisey At Divnogorsk
Yenisei
W:0.52 NME:0.98
R²:0.10 NMSE: 1.35
R²: 0.40
NME: 0.99
NMSE: 1.08
48.65 N / 103.6 E
Bratislava
Danube
W:0.73 NME:1.09
R²:0.42 NMSE: 1.11
R²: 0.06
NME: 1.41
NMSE: 2.11
48.12 N / 17.1 E
YELLOWKNIFE RIVER POWER DIVERSION AT SITE Y2
Mackenzie
NME:1.24
R²:0.00 NMSE: 1.95
R²: 0.01
NME: 1.28
NMSE: 2.06
48 N / 85.22 E
Ceatal Izmail
Danube
W:0.58 NME:1.73
R²:0.38 NMSE: 3.12
R²: 0.12
NME: 2.56
NMSE: 6.75
45.18 N / 28.8 E
Vicksburg
Mississippi
W:0.68 NME:1.88
R²:0.74 NMSE: 2.95
R²: 0.89
NME: 2.53
NMSE: 5.49
32.31 N / 90.9 W
km³/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Datong
Changjiang
W:0.96
NME:0.35
R^2:0.89
NMSE: 0.13
R^2: 0.92
NME: 0.33
NMSE: 0.12
30.76 N / 117.61 E
Bahadurabad
Brahmaputra
W:0.98
NME:0.24
R^2:0.91
NMSE: 0.10
R^2: 0.95
NME: 0.17
NMSE: 0.05
25.18 N / 89.66 E
Farakka
Ganges
W:0.94
NME:0.46
R^2:0.90
NMSE: 0.36
R^2: 0.91
NME: 0.46
NMSE: 0.38
24.83 N / 87.92 E
Wuzhou 3
Xijiang
W:0.95
NME:0.41
R^2:0.86
NMSE: 0.23
R^2: 0.97
NME: 0.39
NMSE: 0.16
23.48 N / 111.3 E
Ashti
Wainganga
W:0.94
NME:0.46
R^2:0.92
NMSE: 0.30
R^2: 0.99
NME: 0.47
NMSE: 0.29
19.78 N / 79.78 E
km³/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Mukdahan
Mekong
W:0.97 NME:0.26
R^2:0.90 NMSE:0.11
R^2: 0.98
NME: 0.14
NMSE: 0.03
16.33 N / 104.89 E
Khartoum
Blue Nile
W:0.81 NME:1.00
R^2:0.81 NMSE: 1.57
R^2: 0.94
NME: 1.00
NMSE: 1.24
15.61 N / 32.55 E
Bakel
Senegal
W:0.65 NME:1.91
R^2:0.84 NMSE: 5.76
R^2: 0.99
NME: 1.84
NMSE: 4.95
14.9 N / 12.45 W
Langa Tabbetje
Langa Tabbetje
W:0.93 NME:0.56
R^2:0.94 NMSE: 0.41
R^2: 0.97
NME: 0.57
NMSE: 0.47
5 N / 54.4 W
Obidos
Amazonas
W:0.89 NME:0.67
R^2:0.68 NMSE: 0.51
R^2: 0.76
NME: 0.61
NMSE: 0.39
1.91 S / 55.55 W
km^3/month
years
month


Discharge
LPJmL6.0
LPJmL5.10
gauge data
Kinshasa
Zaire
W:0.48 NME:2.79
R²:0.33 NMSE: 7.40
R²: 0.68
NME: 3.09
NMSE: 7.83
4.3 S / 15.3 E
Porto Velho
Rio Madeira
W:0.91 NME:0.54
R²:0.90 NMSE: 0.53
R²: 0.94
NME: 0.50
NMSE: 0.47
8.76 S / 63.91 W
Guaira
Parana
W:0.73 NME:1.48
R²:0.74 NMSE: 2.96
R²: 0.97
NME: 1.63
NMSE: 3.67
24.06 S / 54.26 W
Corrientes
Parana
W:0.47 NME:3.13
R²:0.49 NMSE: 10.43
R²: 0.78
NME: 6.01
NMSE: 42.05
27.46 S / 58.85 W
Salto
Uruguay
W:0.94 NME:0.48
R²:0.85 NMSE: 0.21
R²: 0.85
NME: 0.82
NMSE: 0.68
31.36 S / 57.93 W
km³/month
years
month

References

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