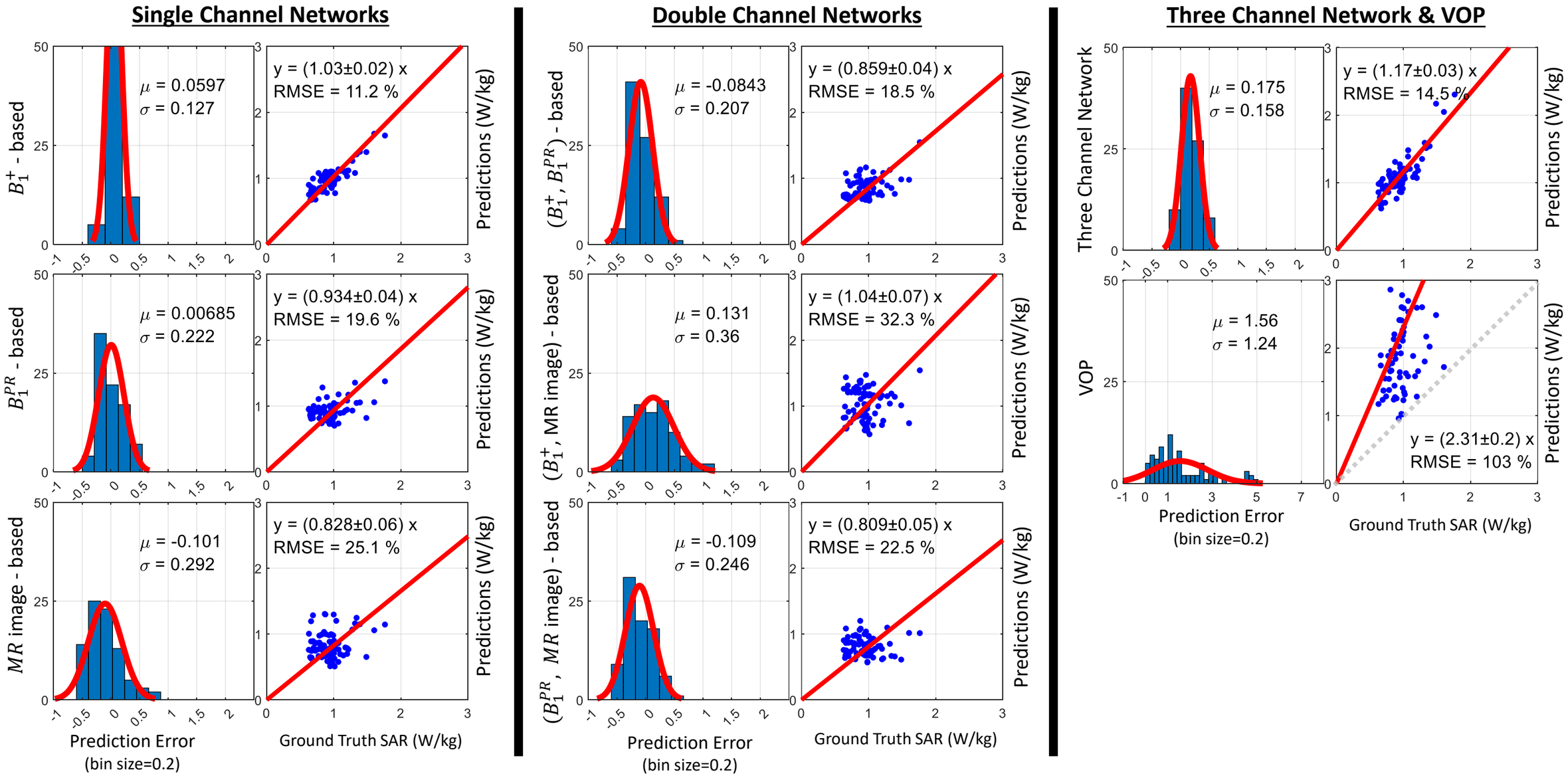
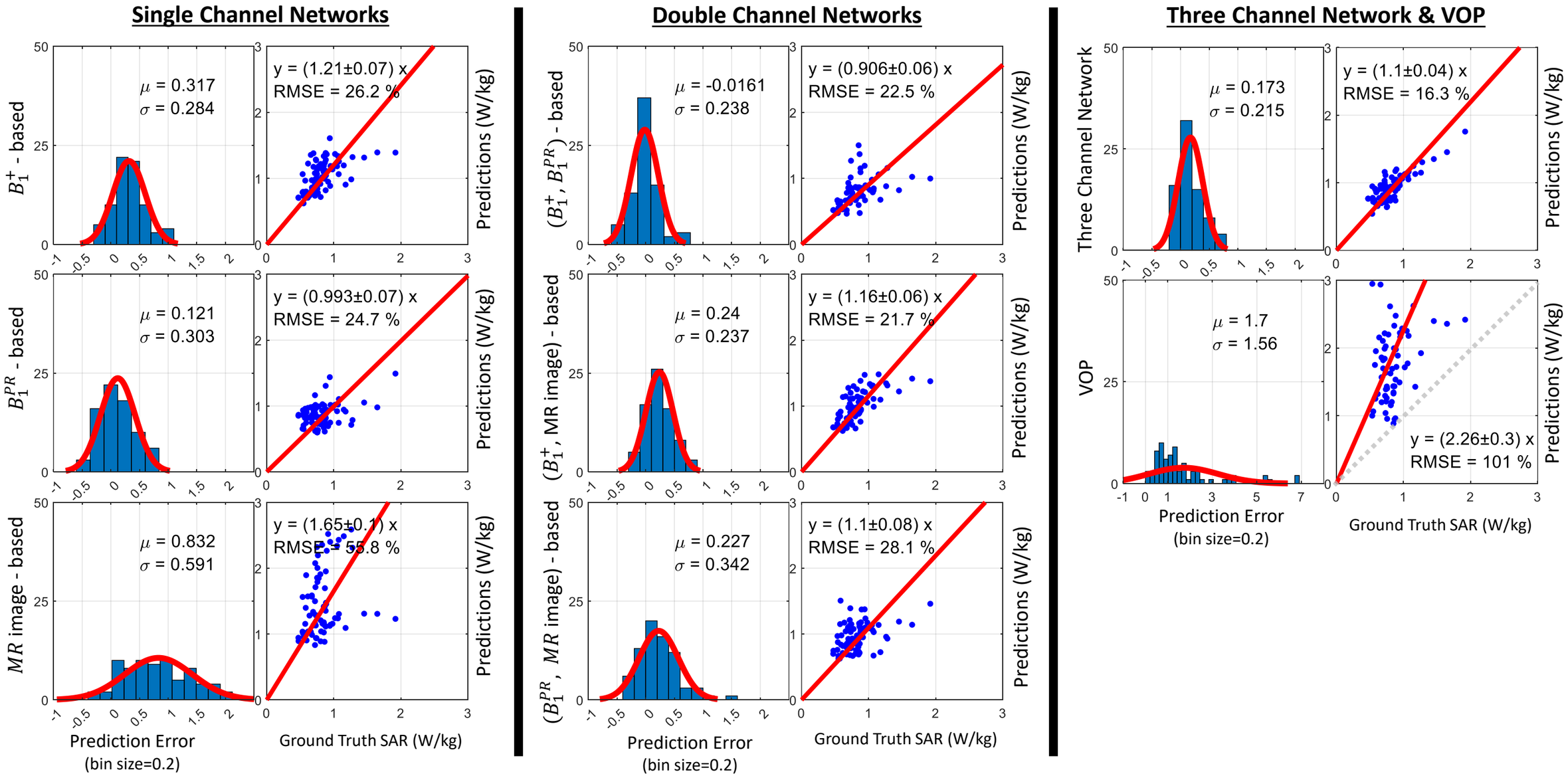
Plots for Each Fold

Deep learning-based local SAR prediction using B_1 maps and structural magnetic resonance images of the head for parallel transmission at 7T

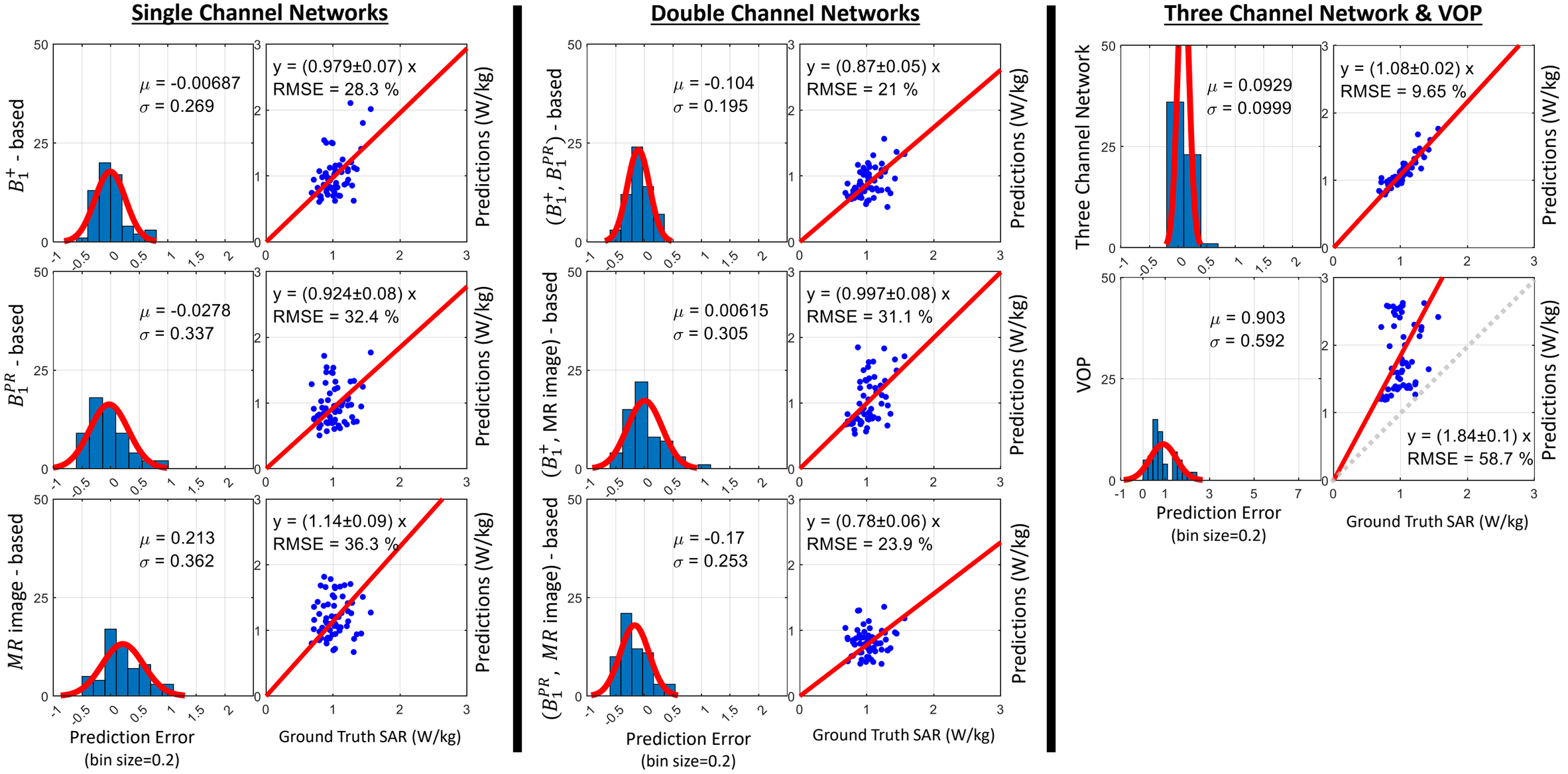
Fold 1


Single Channel Networks
Double Channel Networks
Three Channel Network & VOP
B_1^+ - based
B_1^{PR} - based
MR image - based
(B_1^+, B_1^{PR}) - based
$(B_1^+, MR\ image)$ - based
$(B_1^{PR}, MR\ image)$ - based
Three Channel Network
VOP
μ = 0.0597
σ = 0.127
y = (1.03±0.02) x
RMSE = 11.2 %
μ = 0.00685
σ = 0.222
y = (0.934±0.04) x
RMSE = 19.6 %
μ = -0.101
σ = 0.292
y = (0.828±0.06) x
RMSE = 25.1 %
μ = -0.0843
σ = 0.207
y = (0.859±0.04) x
RMSE = 18.5 %
μ = 0.131
σ = 0.36
y = (1.04±0.07) x
RMSE = 32.3 %
μ = -0.109
σ = 0.246
y = (0.809±0.05) x
RMSE = 22.5 %
μ = 0.175
σ = 0.158
y = (1.17±0.03) x
RMSE = 14.5 %
μ = 1.56
σ = 1.24
y = (2.31±0.2) x
RMSE = 103 %
Prediction Error
(bin size=0.2)
Ground Truth SAR (W/kg)
Predictions (W/kg)

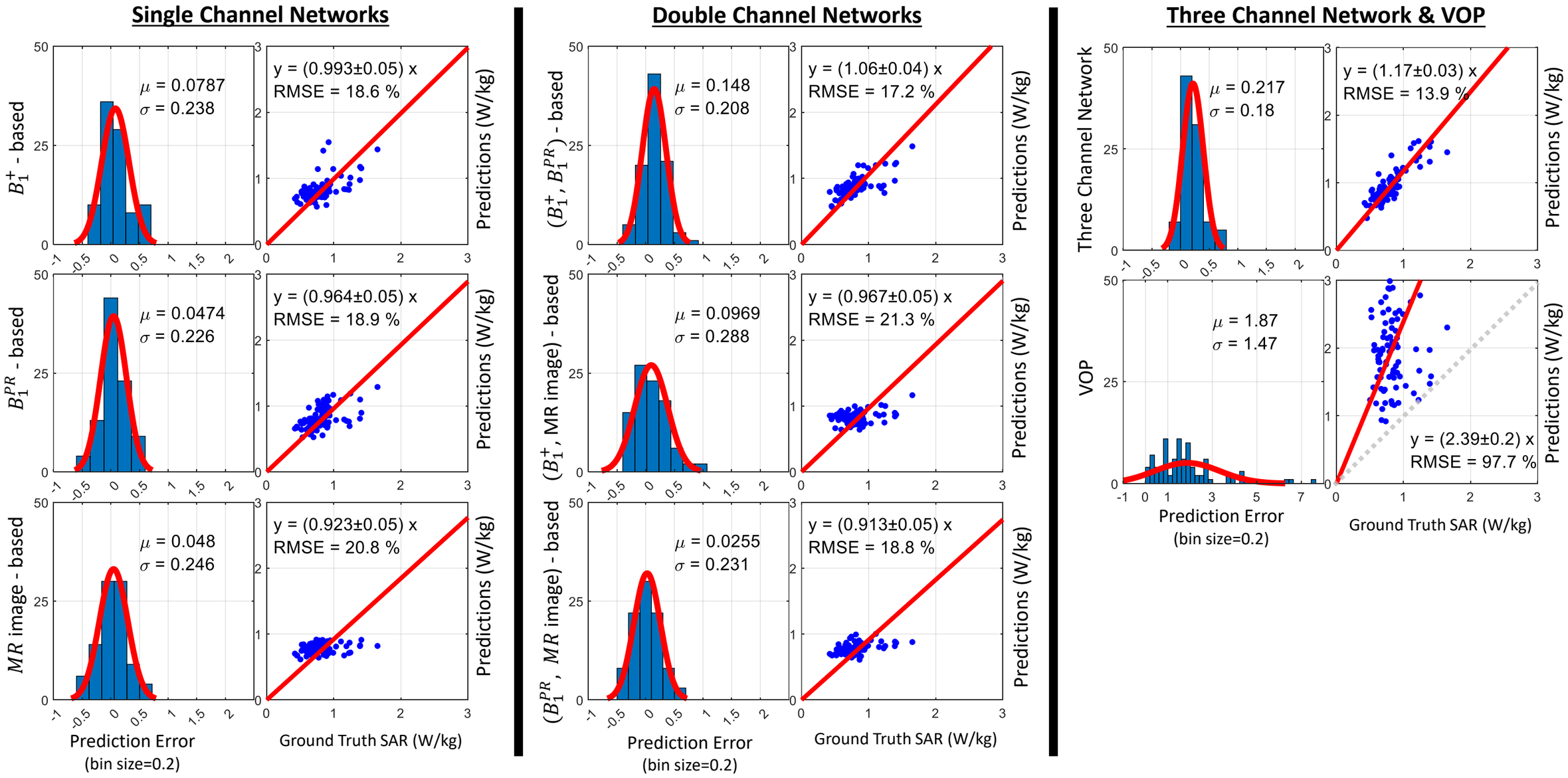
Fold 2


Single Channel Networks
Double Channel Networks
Three Channel Network & VOP
B_1^+ - based
B_1^{PR} - based
MR image - based
(B_1^+, B_1^{PR}) - based
$(B_1^+,$ MR image) - based
$(B_1^{PR},$ MR image) - based
Three Channel Network
VOP
μ = 0.317
σ = 0.284
y = (1.21±0.07) x
RMSE = 26.2 %
μ = 0.121
σ = 0.303
y = (0.993±0.07) x
RMSE = 24.7 %
μ = 0.832
σ = 0.591
y = (1.65±0.1) x
RMSE = 55.8 %
μ = -0.0161
σ = 0.238
y = (0.906±0.06) x
RMSE = 22.5 %
μ = 0.24
σ = 0.237
y = (1.16±0.06) x
RMSE = 21.7 %
μ = 0.227
σ = 0.342
y = (1.1±0.08) x
RMSE = 28.1 %
μ = 0.173
σ = 0.215
y = (1.1±0.04) x
RMSE = 16.3 %
μ = 1.7
σ = 1.56
y = (2.26±0.3) x
RMSE = 101 %
Prediction Error
(bin size=0.2)
Ground Truth SAR (W/kg)
Predictions (W/kg)

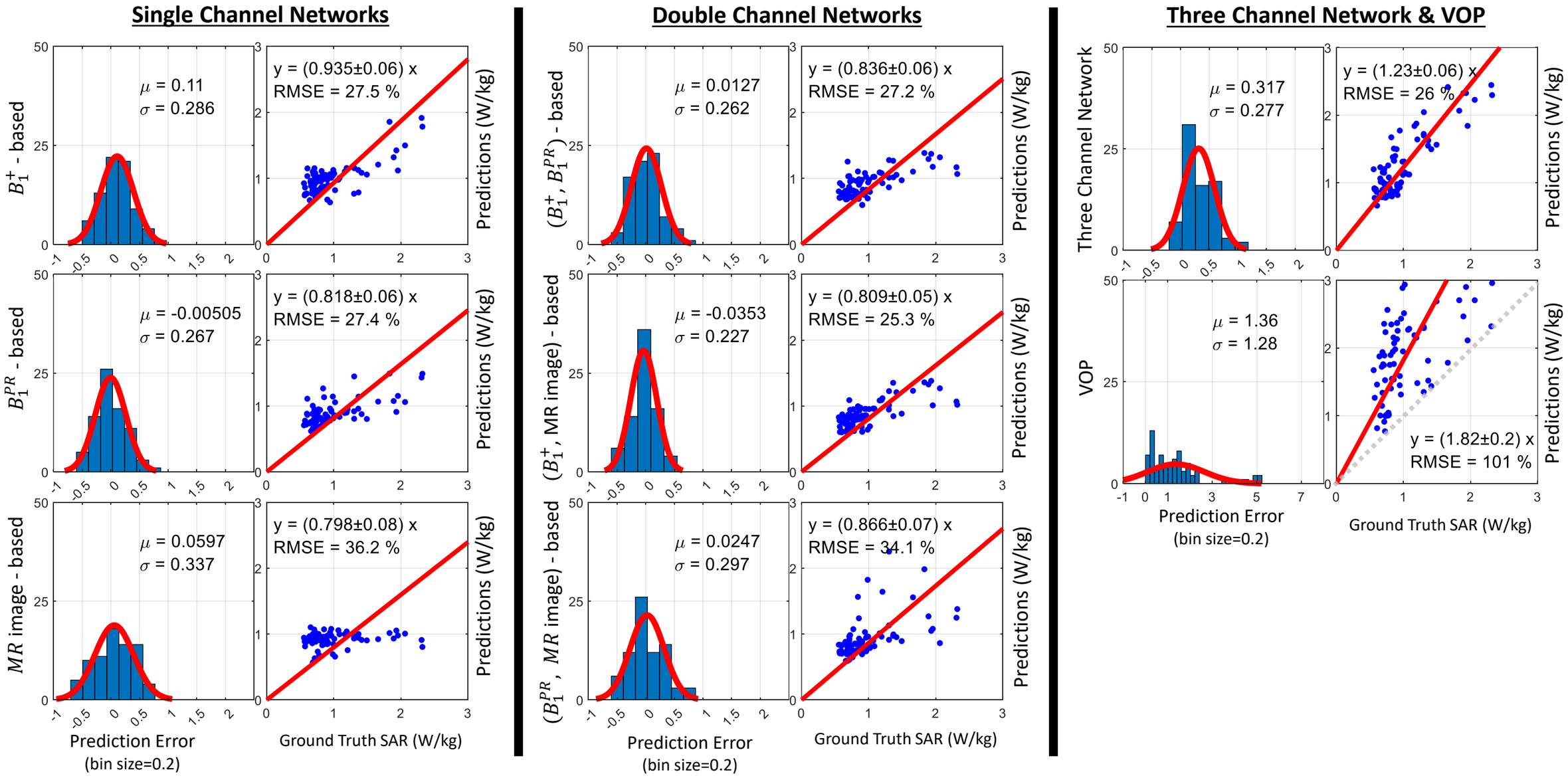
Fold 3


Single Channel Networks
Double Channel Networks
Three Channel Network & VOP
B_1^+ - based
B_1^{PR} - based
MR image - based
(B_1^+, B_1^{PR}) - based
$(B_1^+$, MR image) - based
$(B_1^{PR}$, MR image) - based
Three Channel Network
VOP
μ = -0.00687
σ = 0.269
y = (0.979±0.07) x
RMSE = 28.3 %
μ = -0.0278
σ = 0.337
y = (0.924±0.08) x
RMSE = 32.4 %
μ = 0.213
σ = 0.362
y = (1.14±0.09) x
RMSE = 36.3 %
μ = -0.104
σ = 0.195
y = (0.87±0.05) x
RMSE = 21 %
μ = 0.00615
σ = 0.305
y = (0.997±0.08) x
RMSE = 31.1 %
μ = -0.17
σ = 0.253
y = (0.78±0.06) x
RMSE = 23.9 %
μ = 0.0929
σ = 0.0999
y = (1.08±0.02) x
RMSE = 9.65 %
μ = 0.903
σ = 0.592
y = (1.84±0.1) x
RMSE = 58.7 %
Prediction Error
(bin size=0.2)
Ground Truth SAR (W/kg)
Predictions (W/kg)

Fold 4


Single Channel Networks
Double Channel Networks
Three Channel Network & VOP
B_1^+ - based
B_1^{PR} - based
MR image - based
(B_1^+, B_1^{PR}) - based
$(B_1^+$, MR image) - based
$(B_1^{PR}$, MR image) - based
Three Channel Network
VOP
μ = 0.0787
σ = 0.238
y = (0.993±0.05) x
RMSE = 18.6 %
μ = 0.0474
σ = 0.226
y = (0.964±0.05) x
RMSE = 18.9 %
μ = 0.048
σ = 0.246
y = (0.923±0.05) x
RMSE = 20.8 %
μ = 0.148
σ = 0.208
y = (1.06±0.04) x
RMSE = 17.2 %
μ = 0.0969
σ = 0.288
y = (0.967±0.05) x
RMSE = 21.3 %
μ = 0.0255
σ = 0.231
y = (0.913±0.05) x
RMSE = 18.8 %
μ = 0.217
σ = 0.18
y = (1.17±0.03) x
RMSE = 13.9 %
μ = 1.87
σ = 1.47
y = (2.39±0.2) x
RMSE = 97.7 %
Prediction Error
(bin size=0.2)
Ground Truth SAR (W/kg)
Predictions (W/kg)

Fold 5


Single Channel Networks
Double Channel Networks
Three Channel Network & VOP
B_1^+ - based
B_1^{PR} - based
MR image - based
(B_1^+, B_1^{PR}) - based
$(B_1^+$, MR image) - based
$(B_1^{PR}$, MR image) - based
Three Channel Network
VOP
μ = 0.11
σ = 0.286
y = (0.935±0.06) x
RMSE = 27.5 %
μ = -0.00505
σ = 0.267
y = (0.818±0.06) x
RMSE = 27.4 %
μ = 0.0597
σ = 0.337
y = (0.798±0.08) x
RMSE = 36.2 %
μ = 0.0127
σ = 0.262
y = (0.836±0.06) x
RMSE = 27.2 %
μ = -0.0353
σ = 0.227
y = (0.809±0.05) x
RMSE = 25.3 %
μ = 0.0247
σ = 0.297
y = (0.866±0.07) x
RMSE = 34.1 %
μ = 0.317
σ = 0.277
y = (1.23±0.06) x
RMSE = 26 %
μ = 1.36
σ = 1.28
y = (1.82±0.2) x
RMSE = 101 %
Prediction Error
(bin size=0.2)
Ground Truth SAR (W/kg)
Predictions (W/kg)