

Calibration results

Normalized Residuals

Reprojection error (cam0): mean 0.326252412134, median 0.276616596503, std: 0.455873862309

Reprojection error (cam1): mean 0.302370157656, median 0.269796702256, std: 0.231017595853

Gyroscope error (imu0): mean 0.821917439457, median 0.517155571098, std: 1.10160323333

Accelerometer error (imu0): mean 0.515771656003, median 0.337689662565, std: 0.723060650726

Residuals

Reprojection error (cam0) [px]: mean 0.326252412134, median 0.276616596503, std: 0.455873862309

Reprojection error (cam1) [px]: mean 0.302370157656, median 0.269796702256, std: 0.231017595853

Gyroscope error (imu0) [rad/s]: mean 0.0162646934372, median 0.0102338463931, std: 0.0217993170838

Accelerometer error (imu0) [m/s^2]: mean 0.134163026703, median 0.0878401647101, std: 0.188083242385

Transformation (cam0):

T_ci: (imu0 to cam0):

```
[[-0.99998481  0.00220755  0.0050509  0.03373799]
 [-0.00218038 -0.99998315  0.00538024  0.00430752]
 [ 0.00506269  0.00536915  0.99997277 -0.00235607]
 [ 0.          0.          0.          1.        ]]
```

T_ic: (cam0 to imu0):

```
[[-0.99998481 -0.00218038  0.00506269  0.0337588 ]
 [ 0.00220755 -0.99998315  0.00536915  0.00424562]
 [ 0.0050509  0.00538024  0.99997277  0.00216242]
 [ 0.          0.          0.          1.        ]]
```

timeshift cam0 to imu0: [s] (t_imu = t_cam + shift)

-0.00194704127475

Transformation (cam1):

T_ci: (imu0 to cam1):

```
[[-0.99989885 -0.00750997  0.01207832 -0.0163743 ]
 [ 0.00753446 -0.99996965  0.00198307  0.00363356]
 [ 0.01206306  0.00207387  0.99992509 -0.00217418]
```

```
[ 0.      0.      0.      1.      ]]
```

T_ic: (cam1 to imu0):

```
[[ -0.99989885  0.00753446  0.01206306 -0.01637379]
 [ -0.00750997 -0.99996965  0.00207387  0.00351499]
 [ 0.01207832  0.00198307  0.99992509  0.00236458]
 [ 0.      0.      0.      1.      ]]
```

timeshift cam1 to imu0: [s] (t_imu = t_cam + shift)

```
-0.00198166018608
```

Baselines:

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Baseline (cam0 to cam1):

```
[[ 0.99992809  0.00975499  0.00697549 -0.05013545]
 [ -0.00973182  0.99994704 -0.00334783 -0.00035329]
 [ -0.00700777  0.0032797  0.99997007  0.00040412]
 [ 0.      0.      0.      1.      ]]
baseline norm: 0.0501383201485 [m]
```

Gravity vector in target coords: [m/s^2]

```
[-0.02543784 -9.80614305  0.08564106]
```

Calibration configuration

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cam0

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Camera model: omni

Focal length: [774.0296906695784, 773.5172723077987]

Principal point: [312.0137799575718, 203.34066991604752]

Omni xi: 1.78783424122

Distortion model: radtan

Distortion coefficients: [-0.09779482882520649, 0.49613817591180853, 0.001997625115309874, -0.0013355712819770515]

Type: aprilgrid

Tags:

Rows: 6

Cols: 6

Size: 0.021 [m]
Spacing 0.0063 [m]

cam1

Camera model: omni
Focal length: [784.5147297895924, 783.900189997403]
Principal point: [320.65178572566657, 212.48084208535332]
Omni xi: 1.80458722358
Distortion model: radtan
Distortion coefficients: [-0.05454379231255376, 0.330080032052903, 0.0017729025820367877, -0.00040082602370264164]
Type: aprilgrid
Tags:
 Rows: 6
 Cols: 6
 Size: 0.021 [m]
 Spacing 0.0063 [m]

IMU configuration

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IMU0:

Model: calibrated
Update rate: 200.0
Accelerometer:
 Noise density: 0.0183933306265
 Noise density (discrete): 0.260120976292
 Random walk: 0.000822996092865

Gyroscope:

 Noise density: 0.00139927375564
 Noise density (discrete): 0.019788719227
 Random walk: 6.6045706138e-05

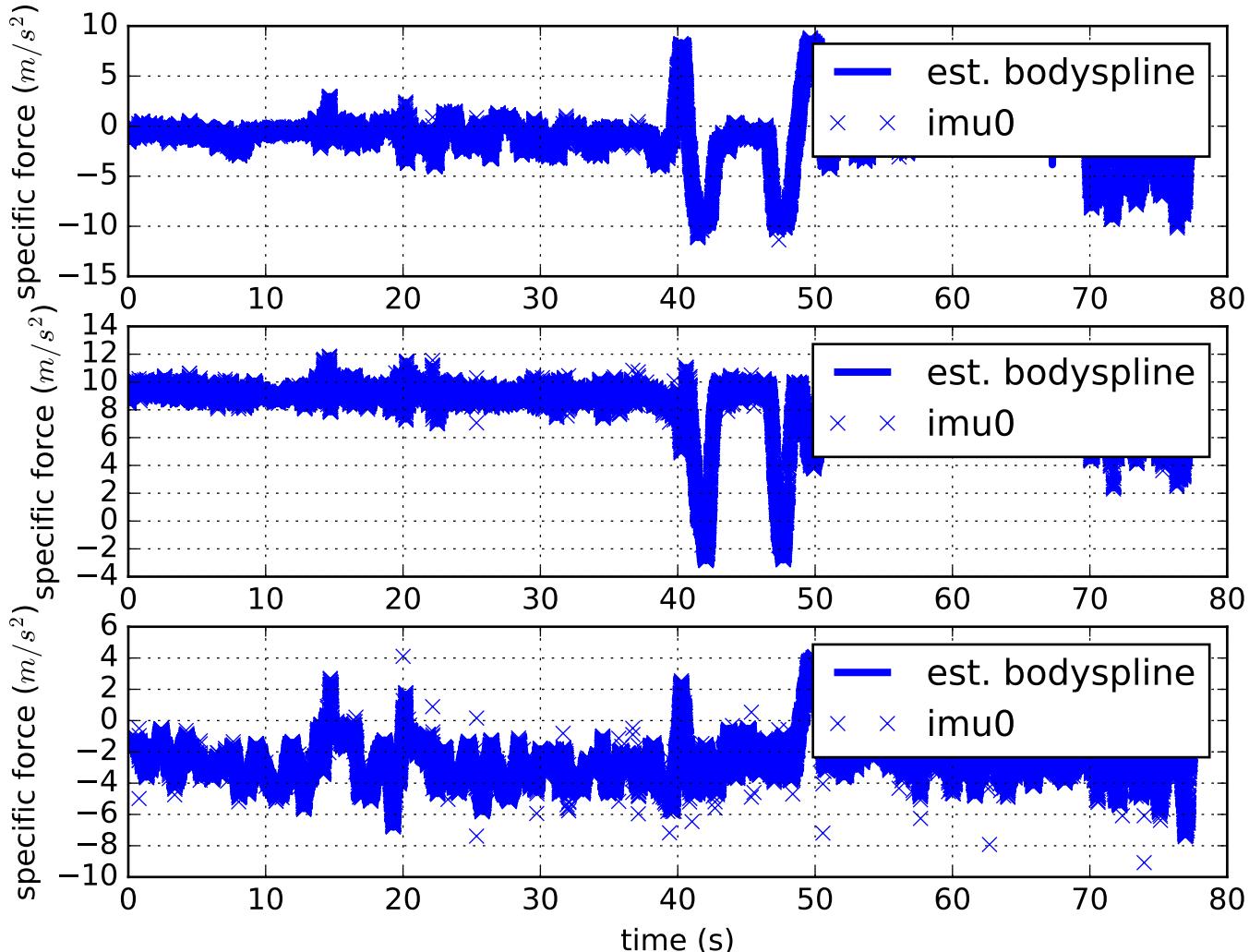
T_i_b

[[1. 0. 0. 0.]
 [0. 1. 0. 0.]
 [0. 0. 1. 0.]

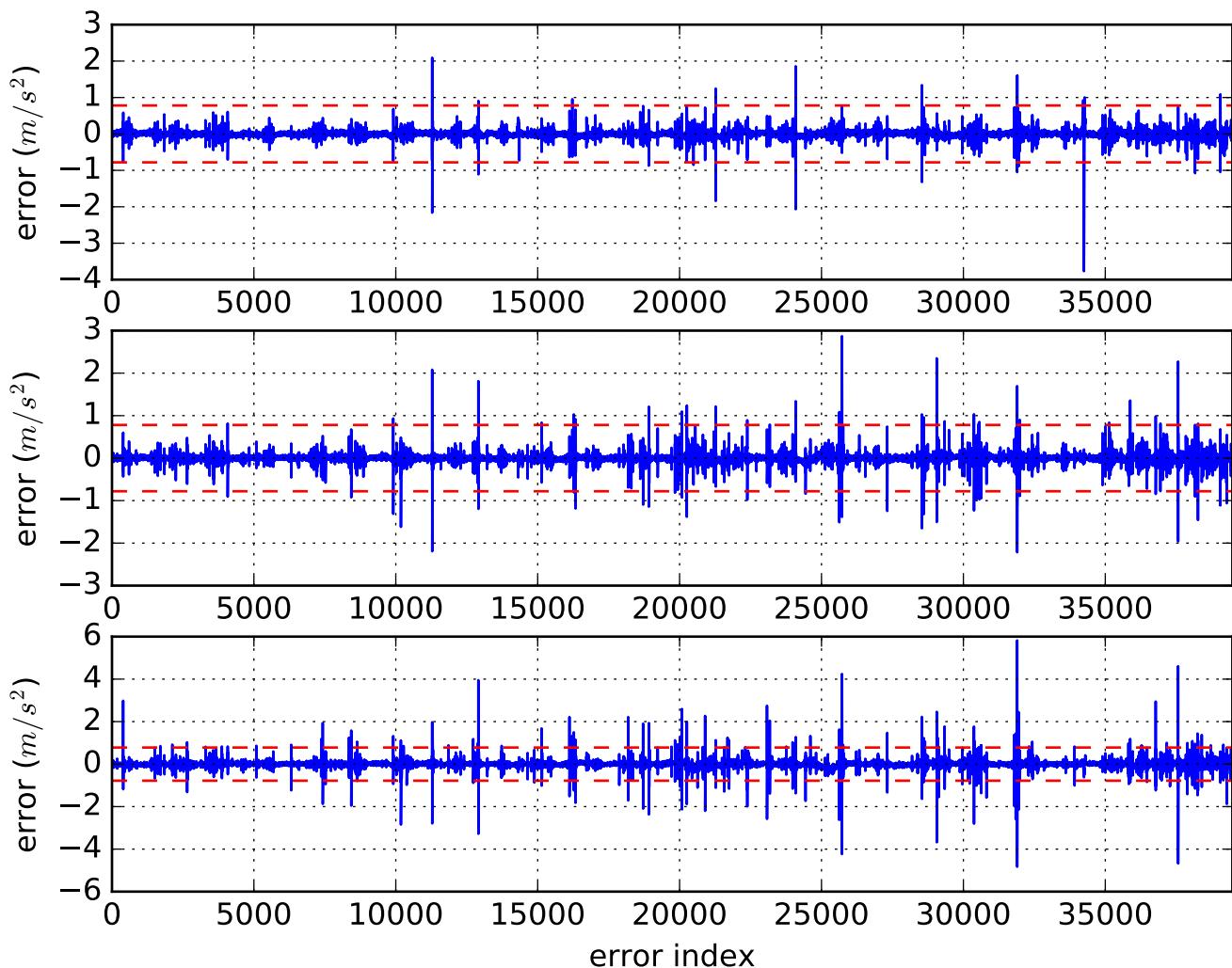
[0. 0. 0. 1.]]

time offset with respect to IMU0: 0.0 [s]

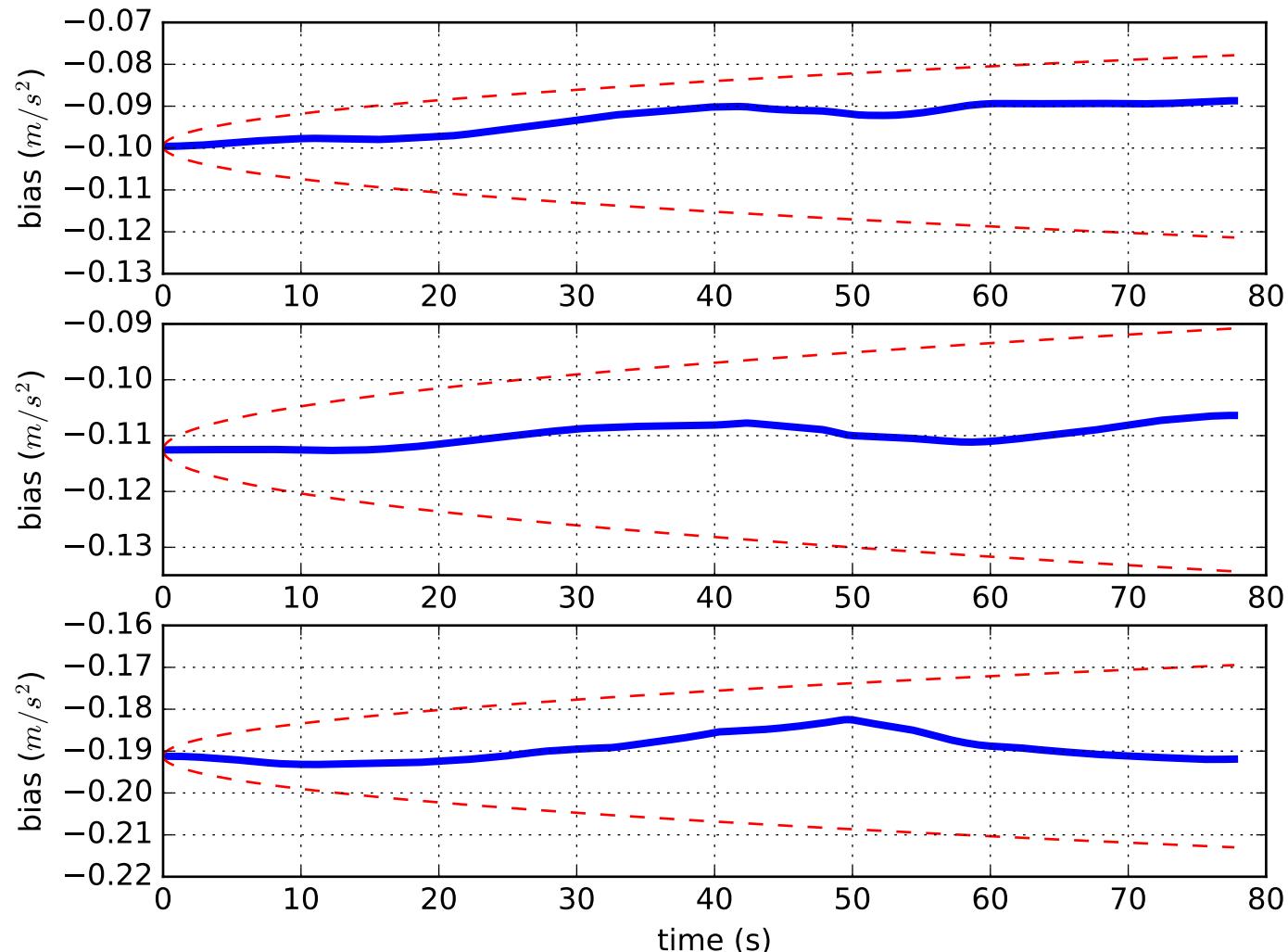
Comparison of predicted and measured specific force (imu0 frame)



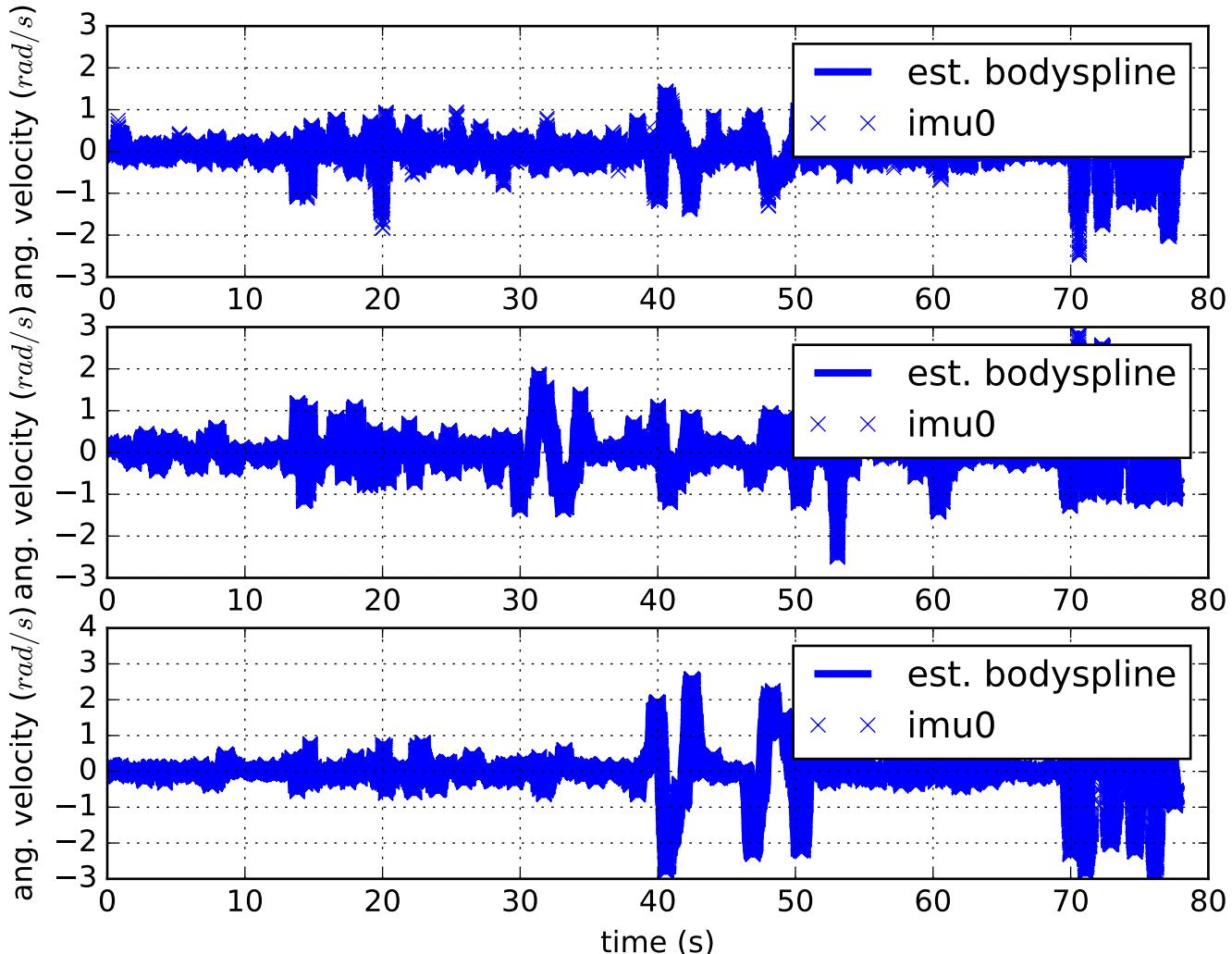
imu0: acceleration error



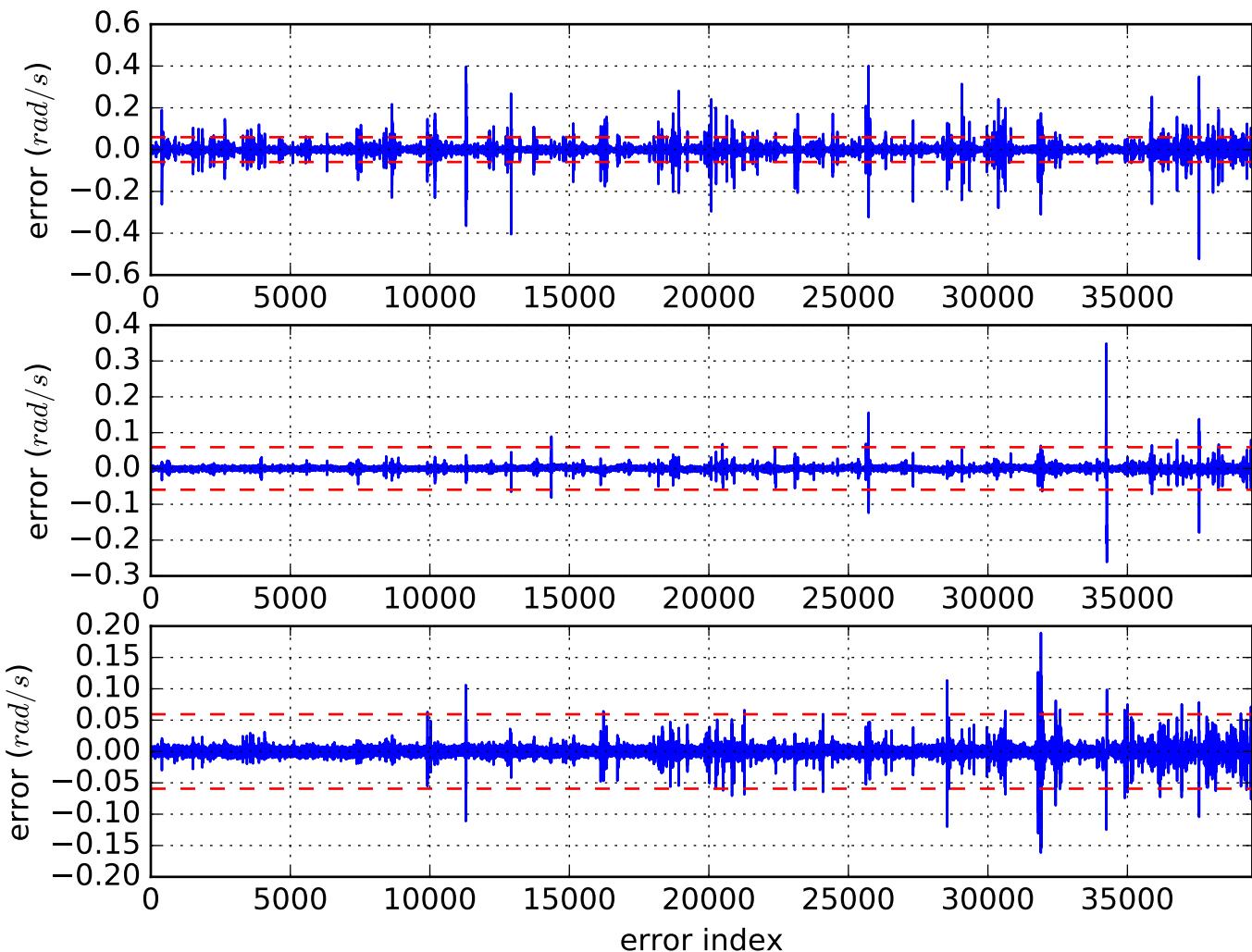
imu0: estimated accelerometer bias (imu frame)



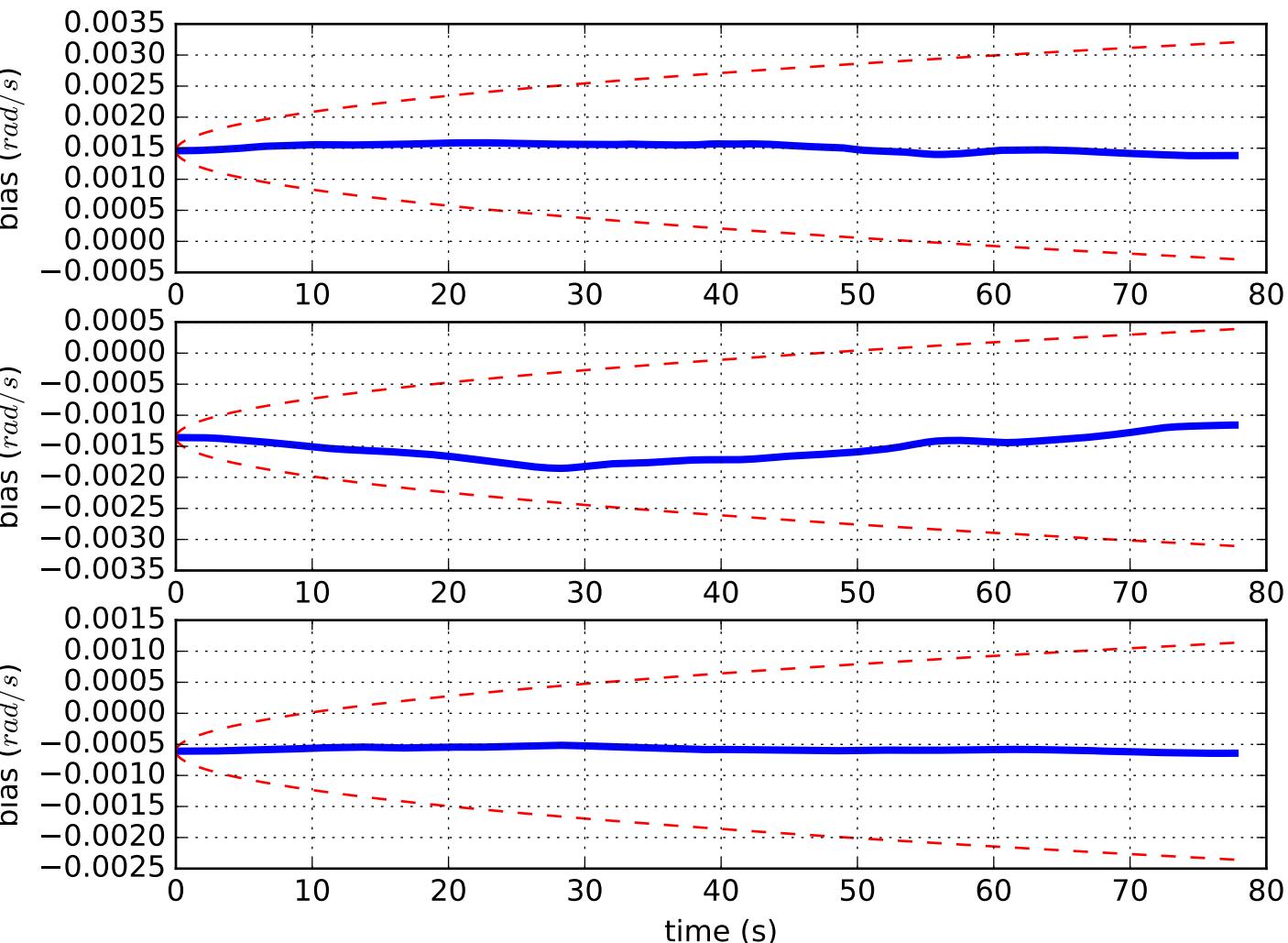
Comparison of predicted and measured angular velocities (body frame)



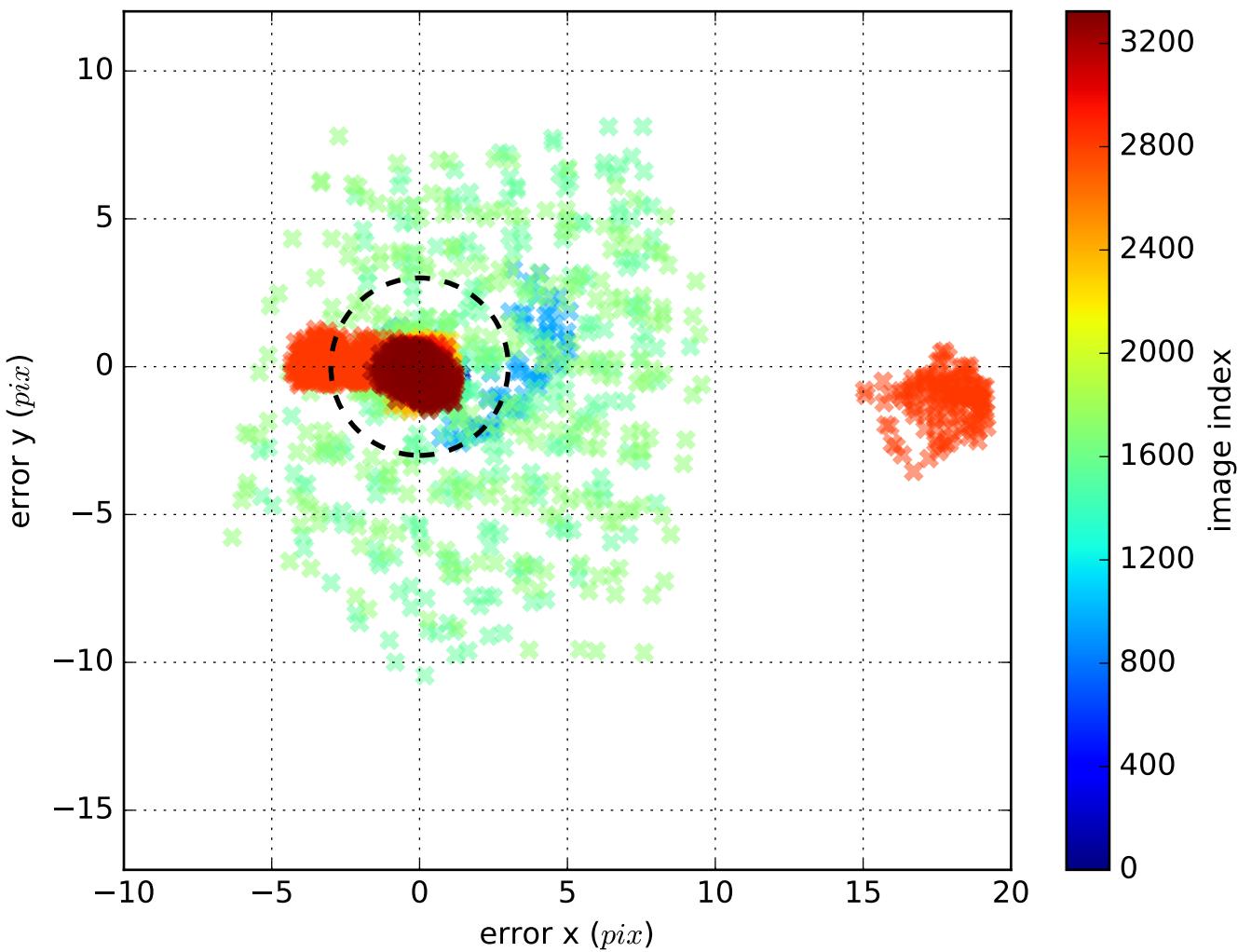
imu0: angular velocities error



imu0: estimated gyro bias (imu frame)



cam0: reprojection errors



cam1: reprojection errors

