Supplementary material

A. Forces and torques – convergence and data

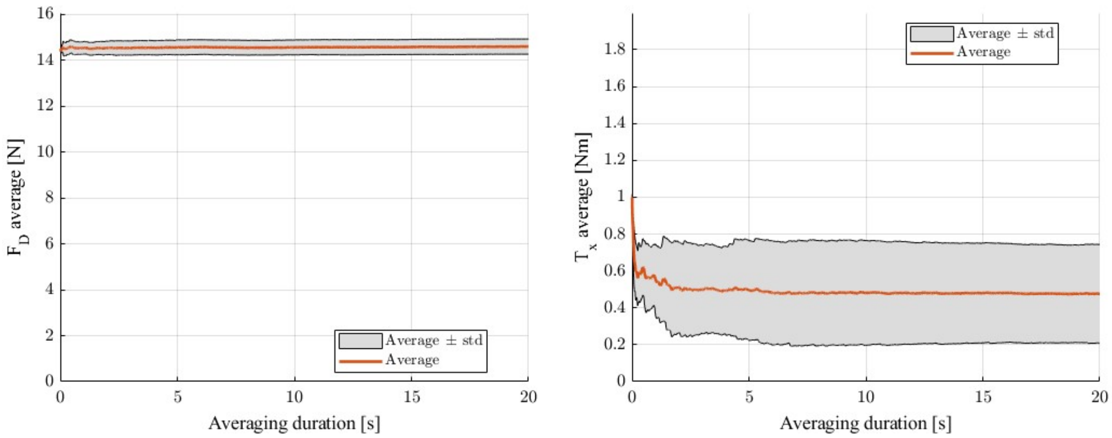


Figure 1: Time average and standard deviation of force and torque in the x-direction for the configuration in drowned position with loose clothes and yaw angle of 0°.

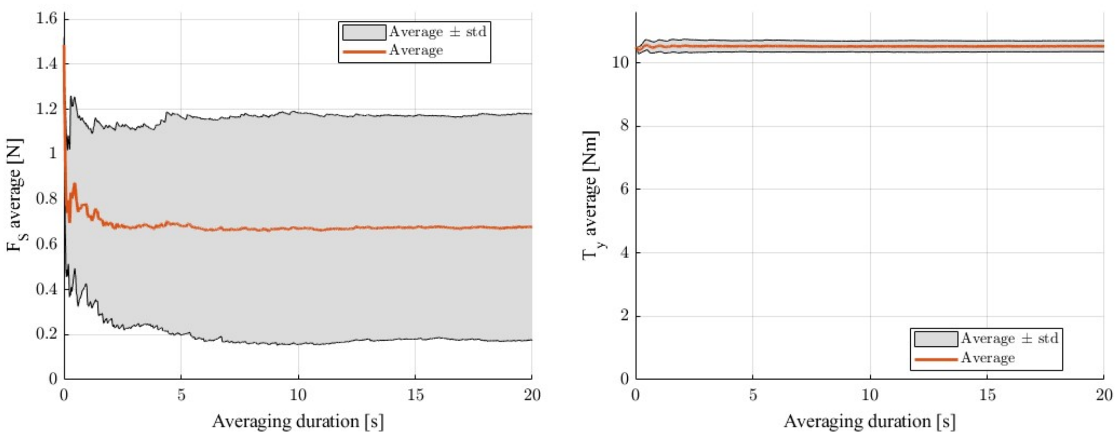


Figure 2: Time average and standard deviation of force and torque in the y-direction for the configuration in drowned position with loose clothes and yaw angle of 0°.

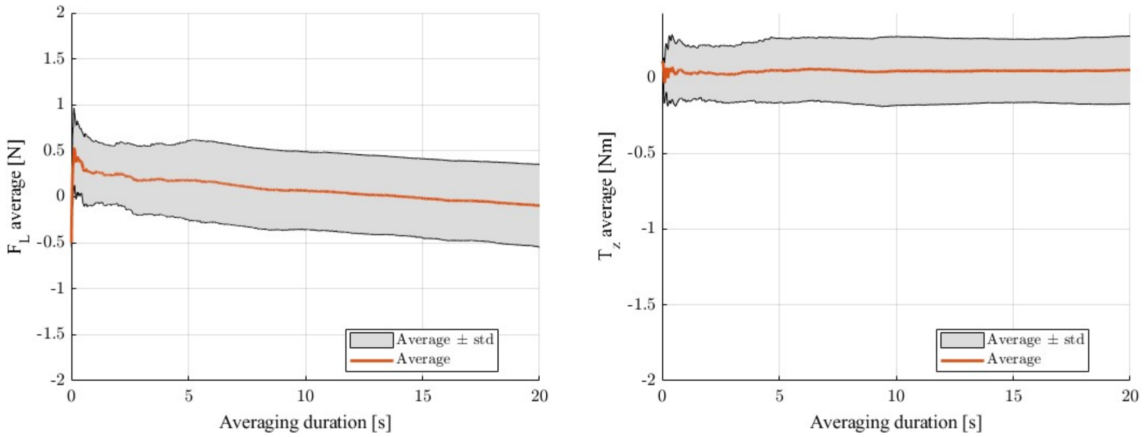


Figure 3: Time average and standard deviation of force and torque in the z-direction for the configuration in drowned position with loose clothes and yaw angle of 0°.

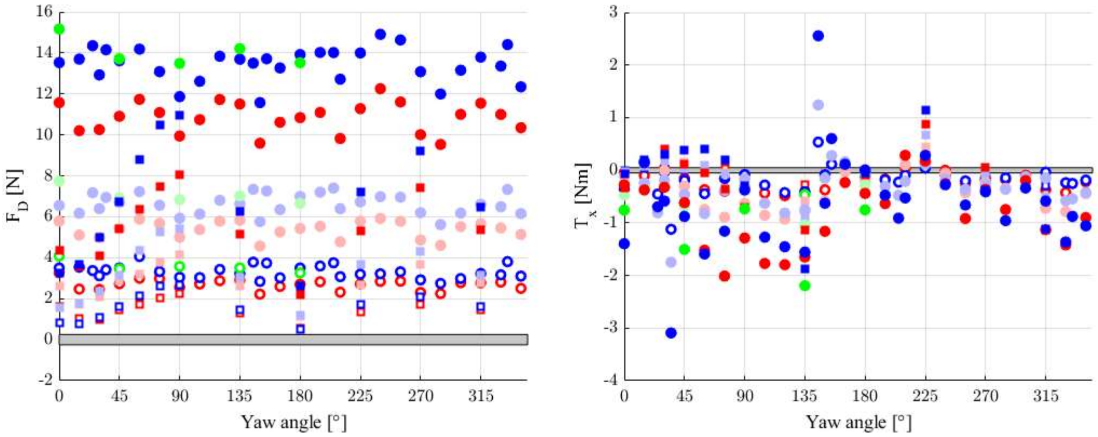


Figure 4: Forces and torques in the x-direction. The grey shaded area represents the resolution of the sensors.

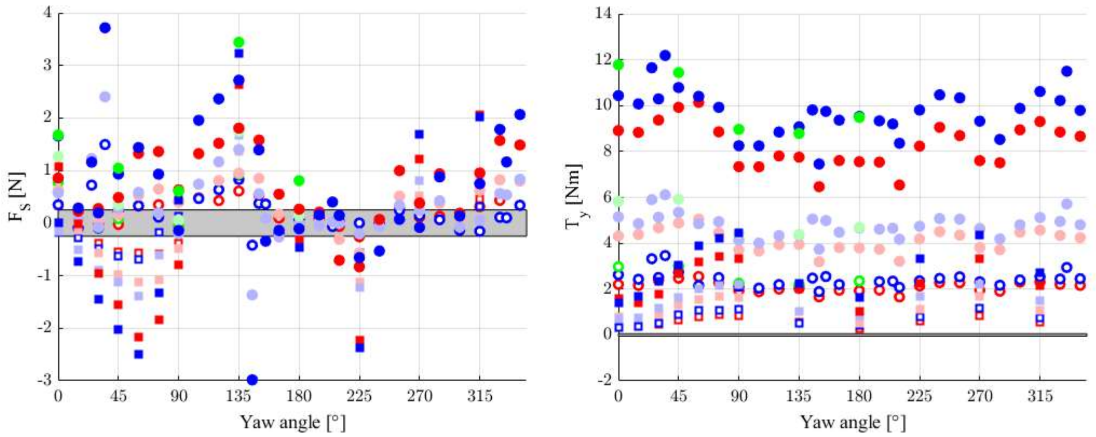


Figure 5: Forces and torques in the y-direction. The grey shaded area represents the resolution of the sensors.

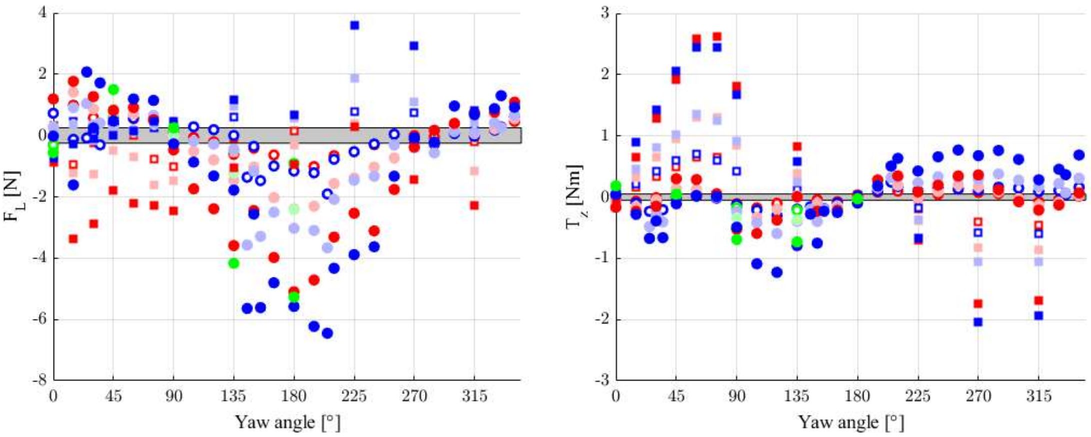


Figure 6: Forces and torques in the z-direction. The grey shaded area represents the resolution of the sensors.

B. Mannequin and modifications

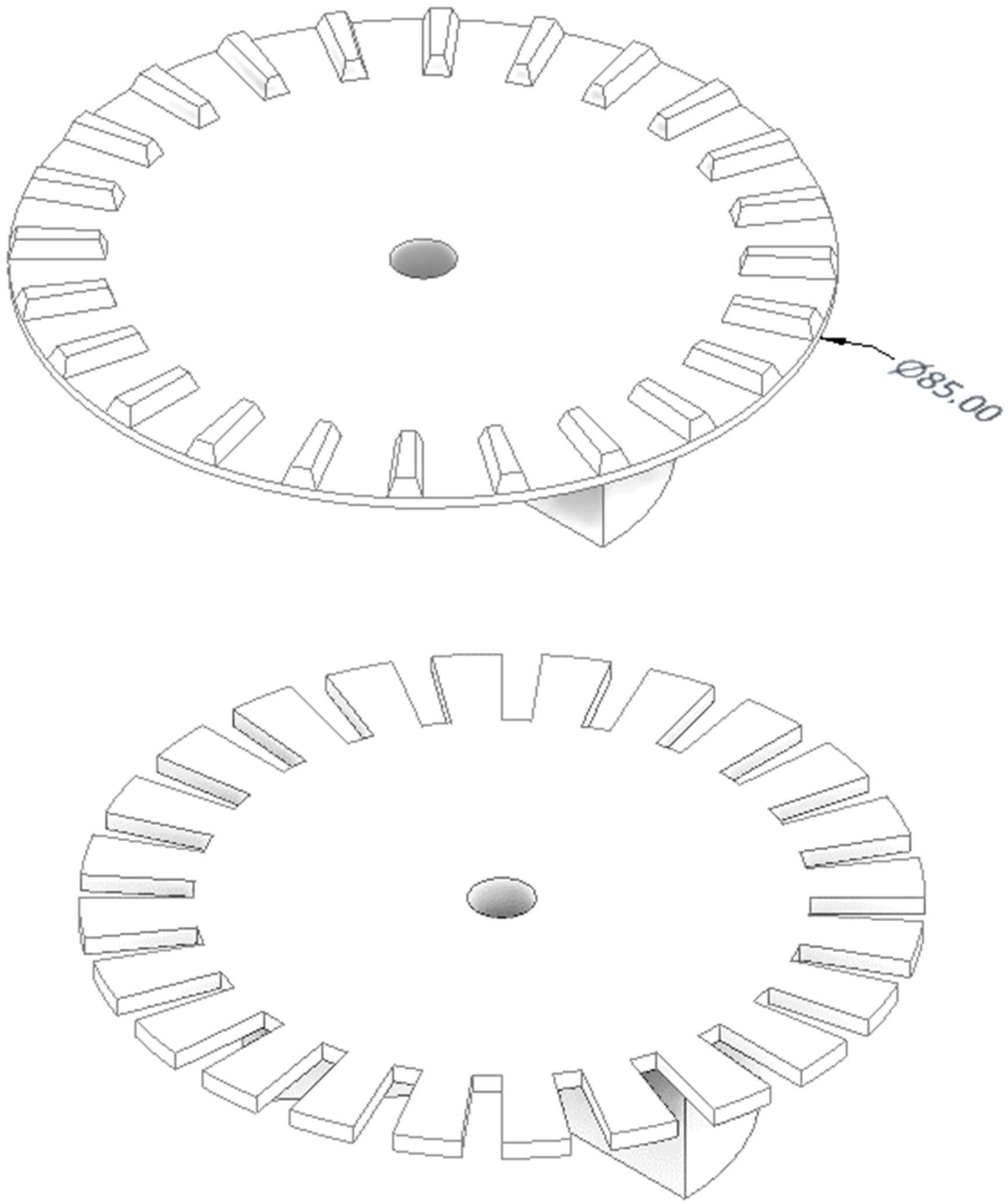


Figure 7: Male and female interlocking 3D-printed parts inside the articulations.

Figure 8: Mannequin in drowned position, tight clothing and yaw angle of 90°. Articulations blocked to have limbs with an angle of 75° with the horizontal.

Figure 9: Mannequin naked in lying position.

C. Drag, side and lift areas and coefficients

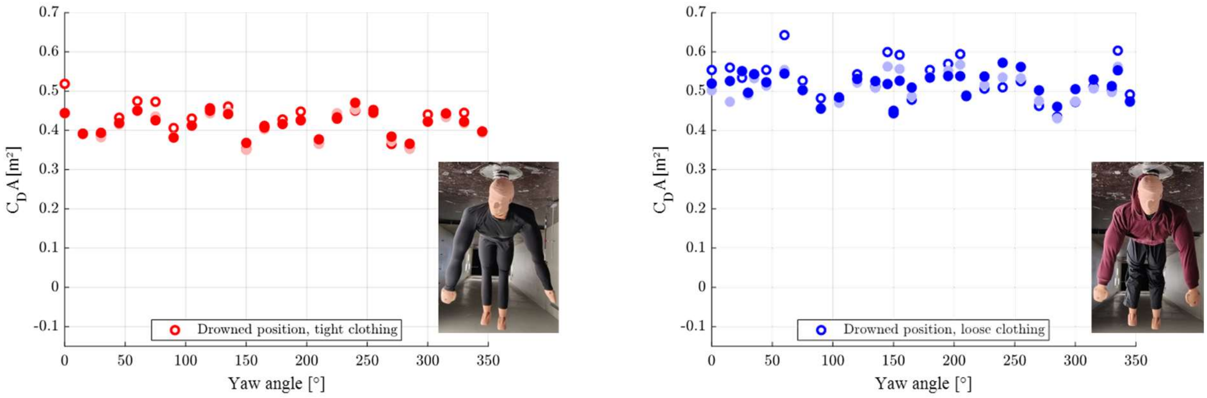


Figure 10: Drag area as a function of yaw angle, drowned position.

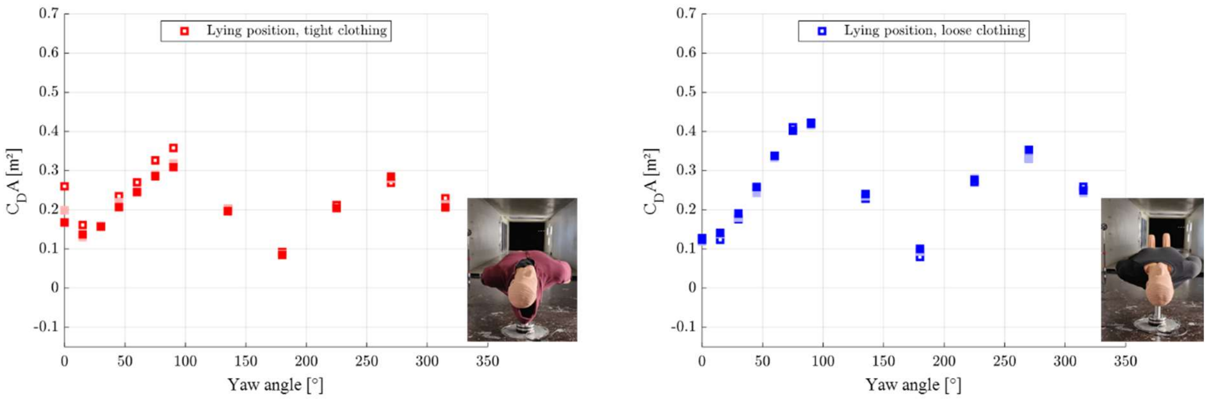


Figure 11: Drag area as a function of yaw angle, lying position.

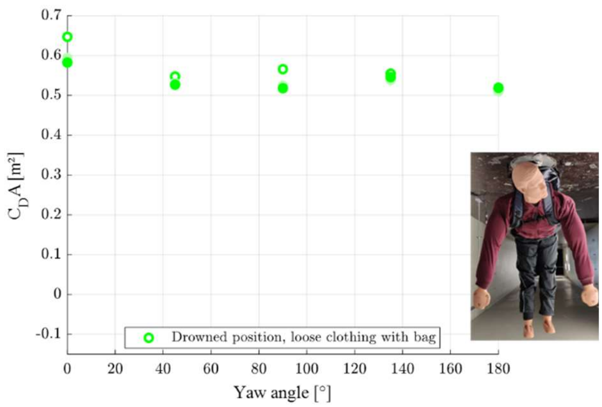


Figure 12: Drag area as a function of yaw angle, drowned position, loose clothes with a backpack.

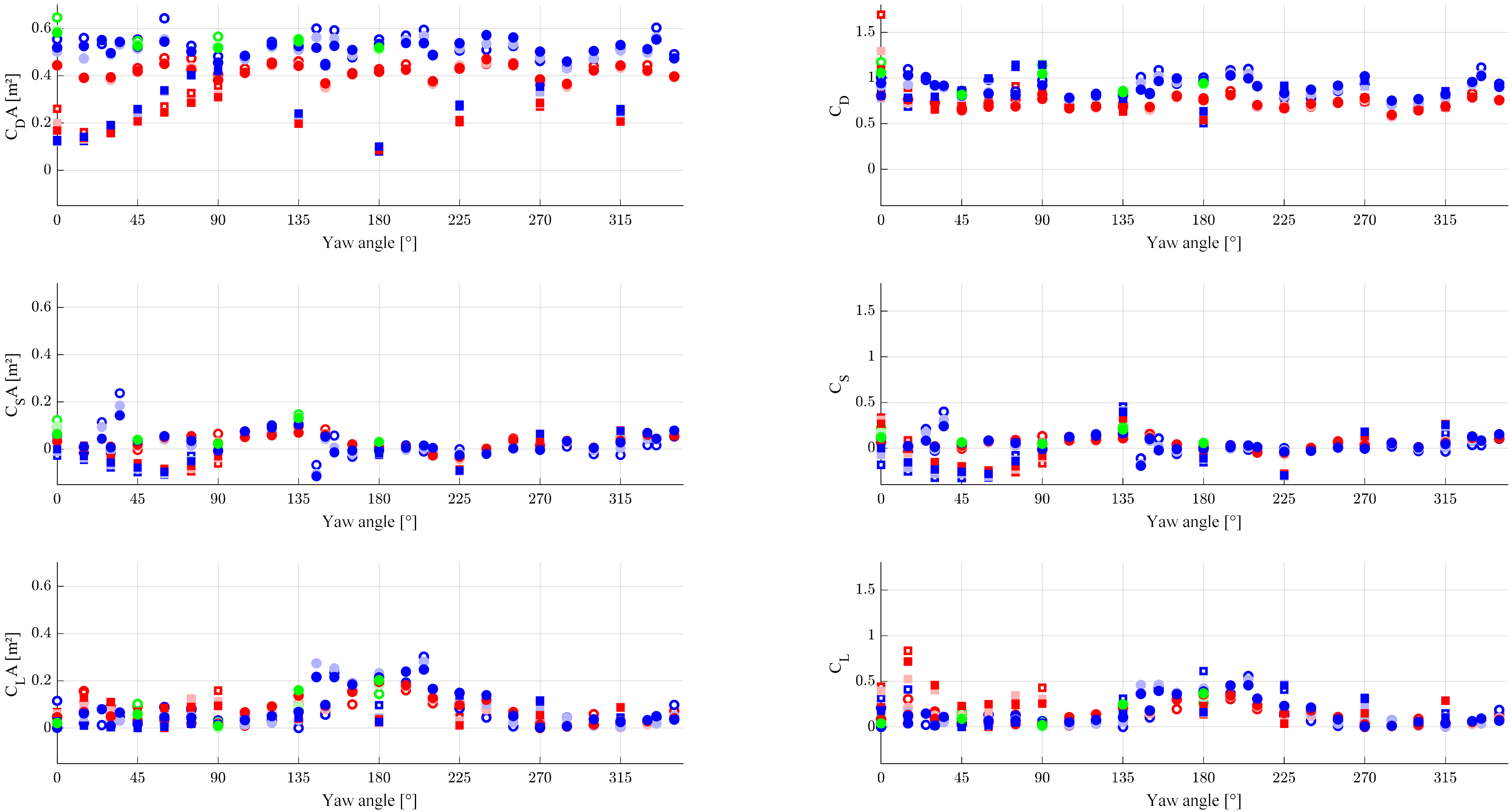


Figure 13: Drag, side and lift areas and coefficients for each configuration.

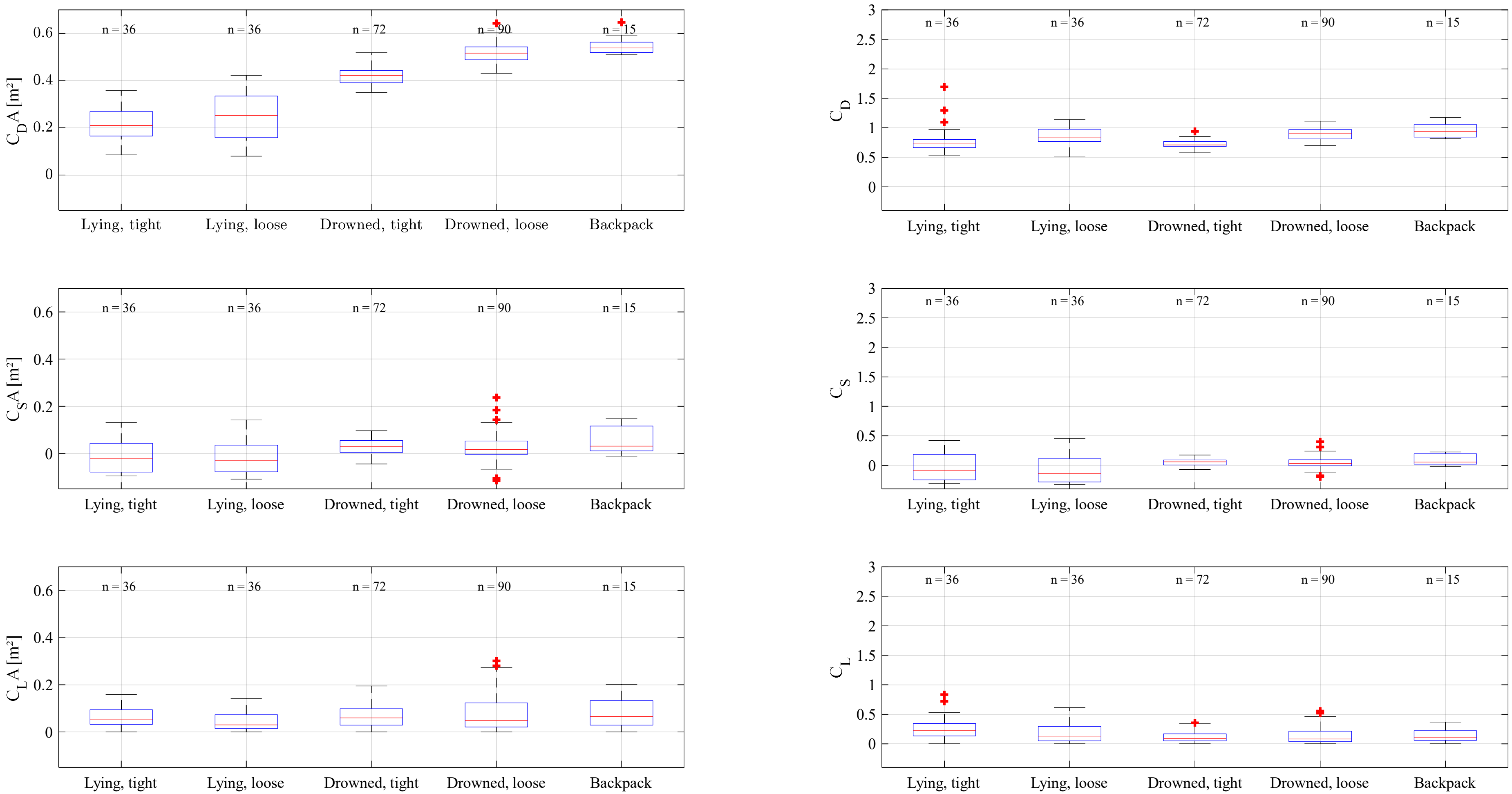


Figure 14: Boxplots of drag, side and lift areas and coefficients for each configuration.

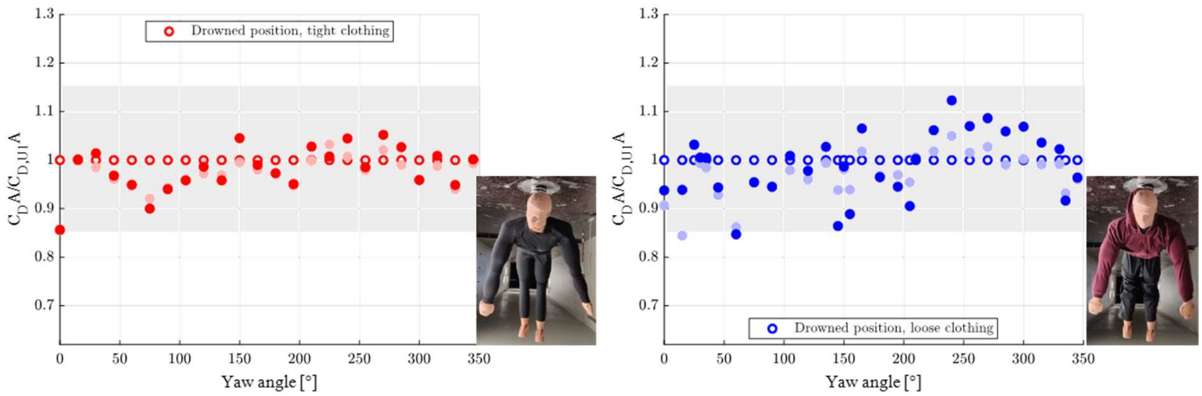


Figure 15: Drag area over the drag area at minimum speed as a function of yaw angle in drowned position.

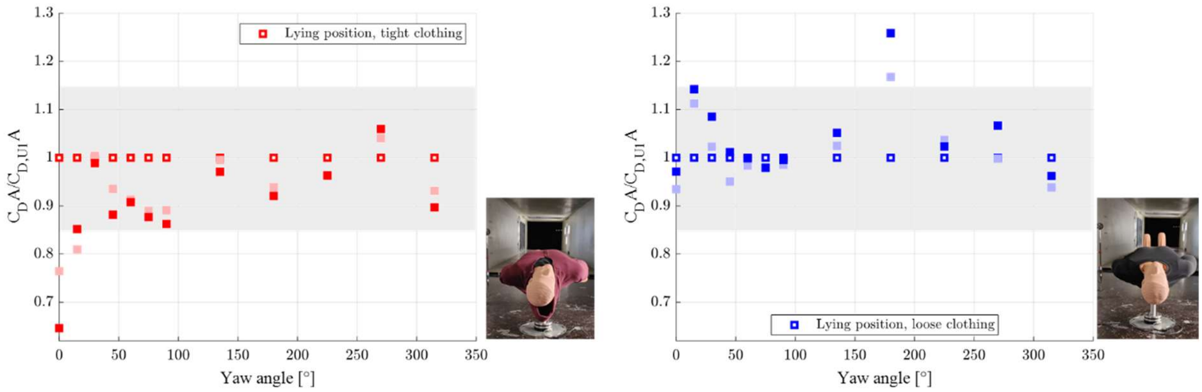


Figure 16: Drag area over the drag area at minimum wind velocity as a function of yaw angle in lying position.

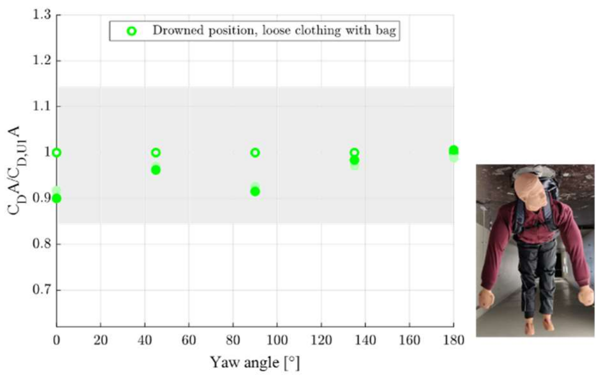


Figure 17: Drag area over the drag area at minimum wind velocity as a function of yaw angle in drowned position with a backpack.

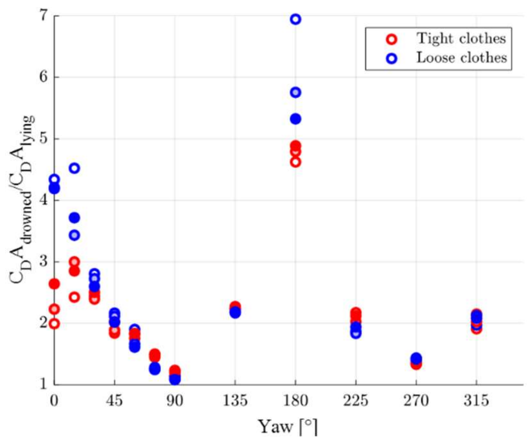


Figure 18: Drag area in drowned position over drag area in lying position as a function of yaw angle.

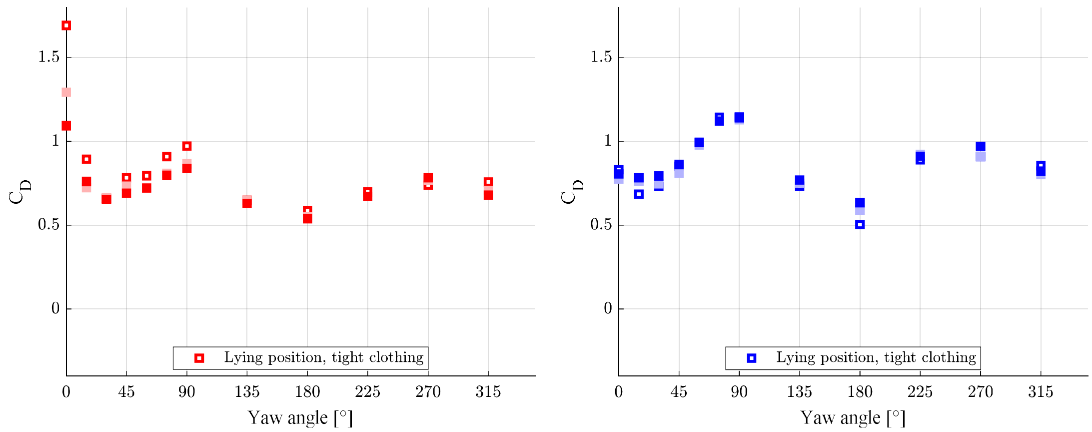


Figure 19: Drag coefficient as a function of yaw angle, lying position.

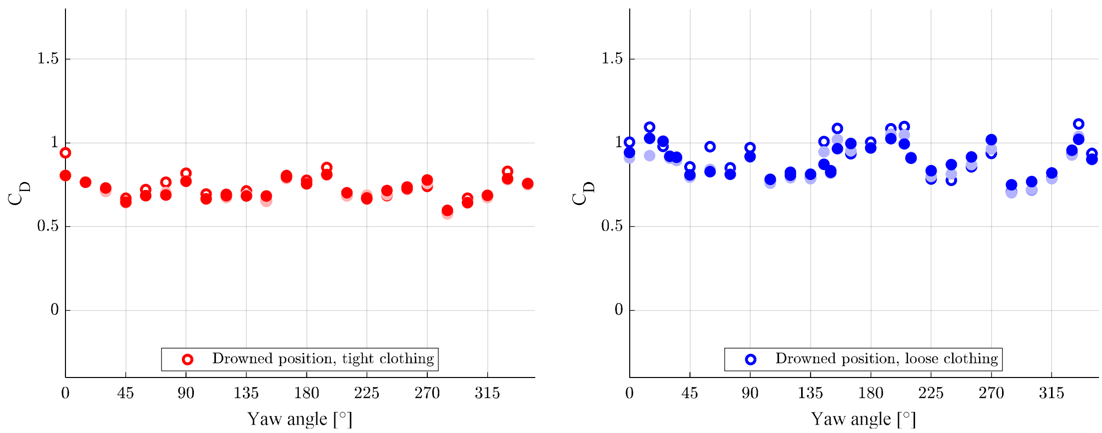


Figure 20: Drag coefficient as a function of yaw angle, drowned position.

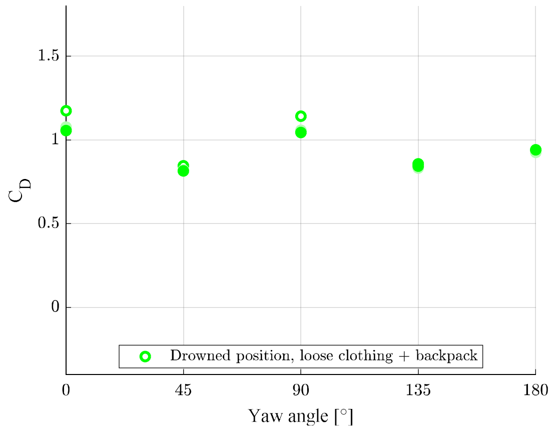


Figure 21: Drag coefficient as a function of yaw angle, drowned position with a backpack.

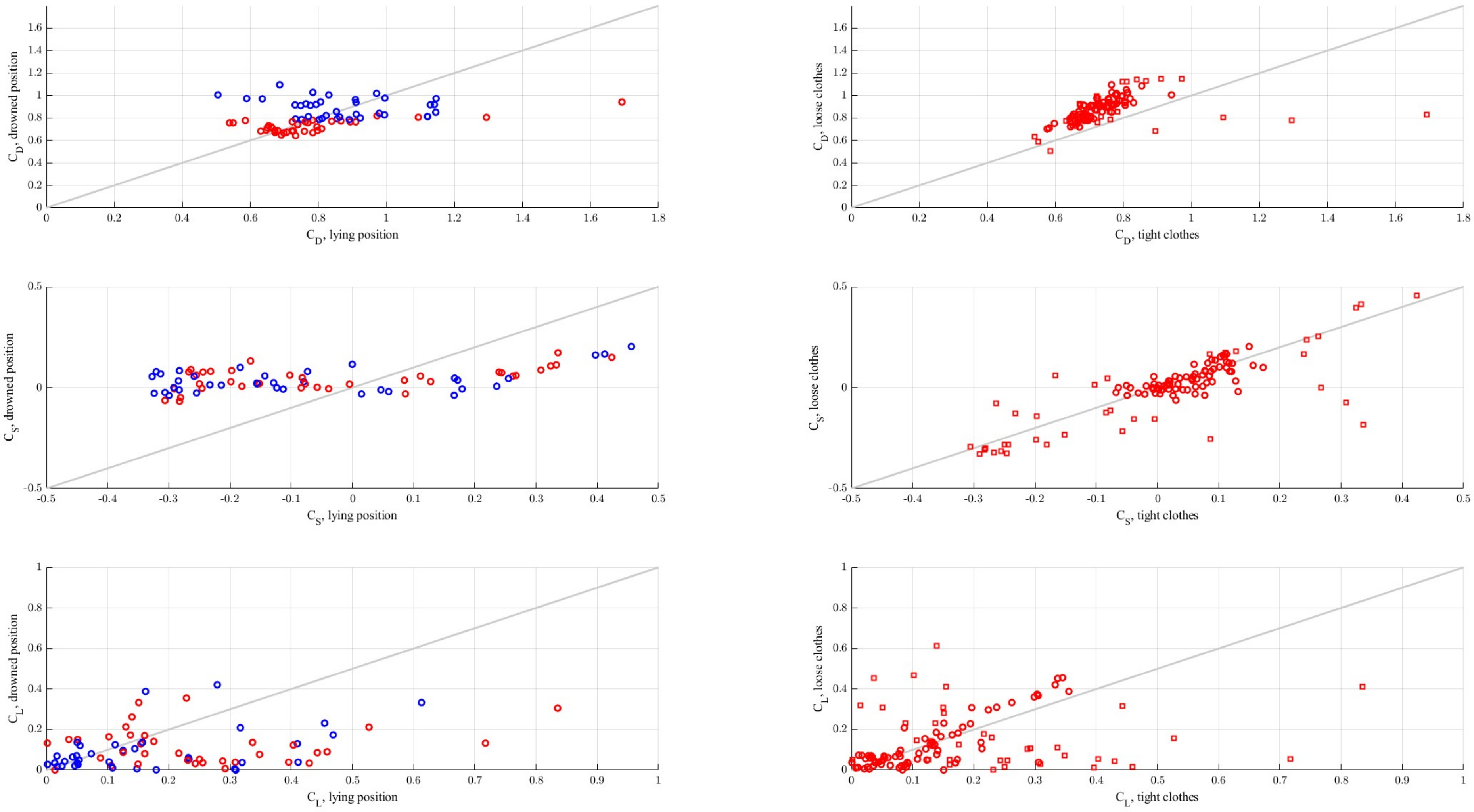


Figure 22: Influence of clothes and position for all type of areas and coefficients.

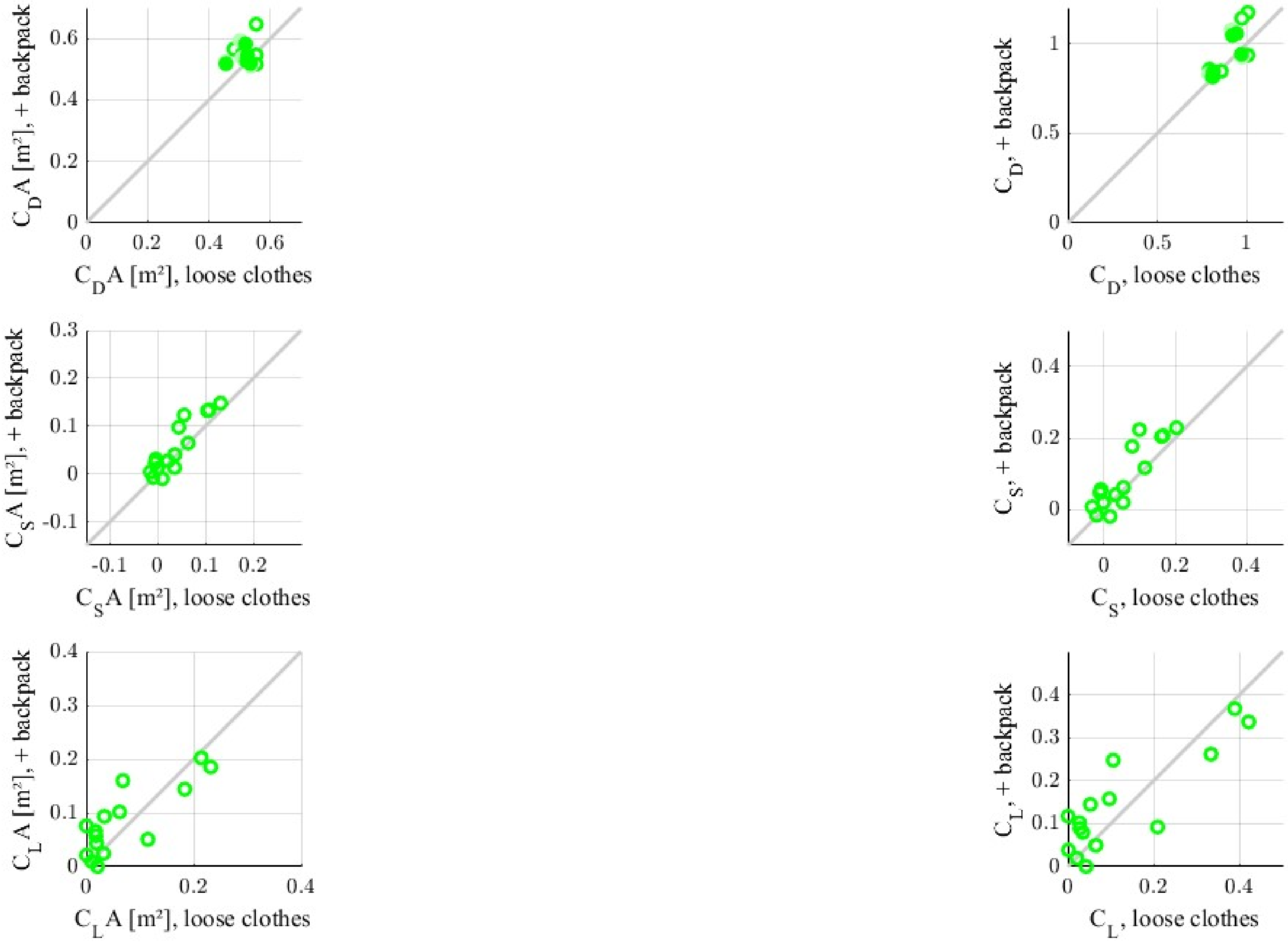


Figure 23: Influence of a backpack.

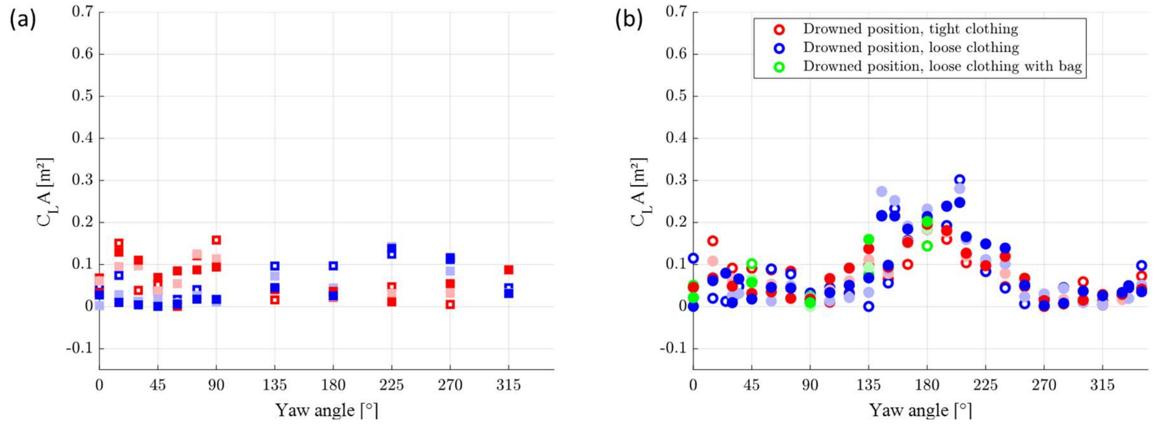


Figure 24: Lift area as a function of yaw angle (a) in the lying position and (b) in the drowned position. The markers face colour refers to the Reynolds number considered in each test. Empty markers: Re = 4.3 × 10⁵, light plain markers: Re = 6.1 × 10⁵, and dark plain markers: Re = 8.8 × 10⁵.

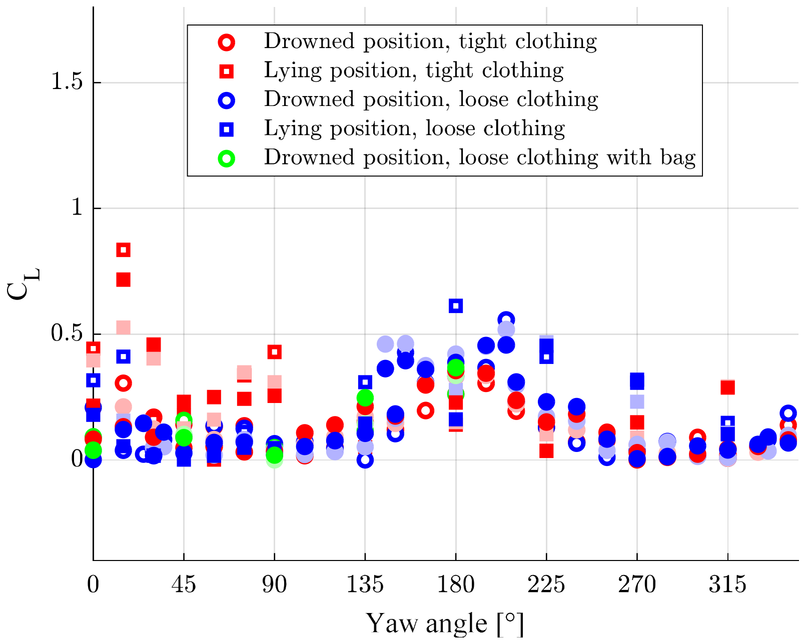
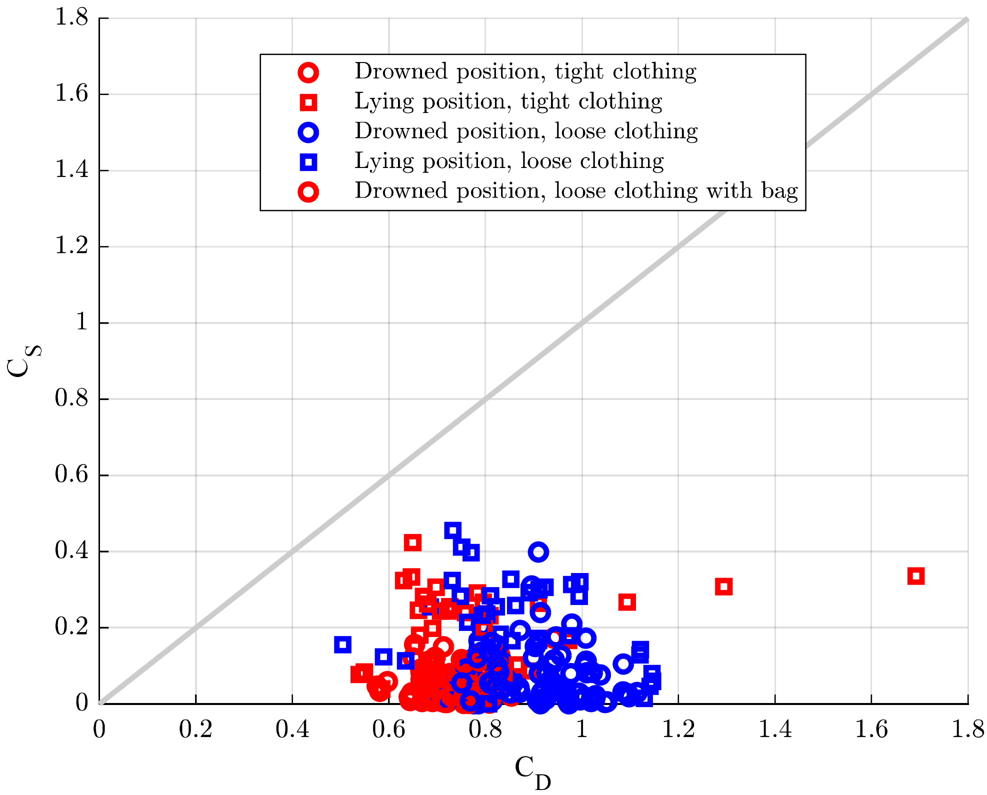
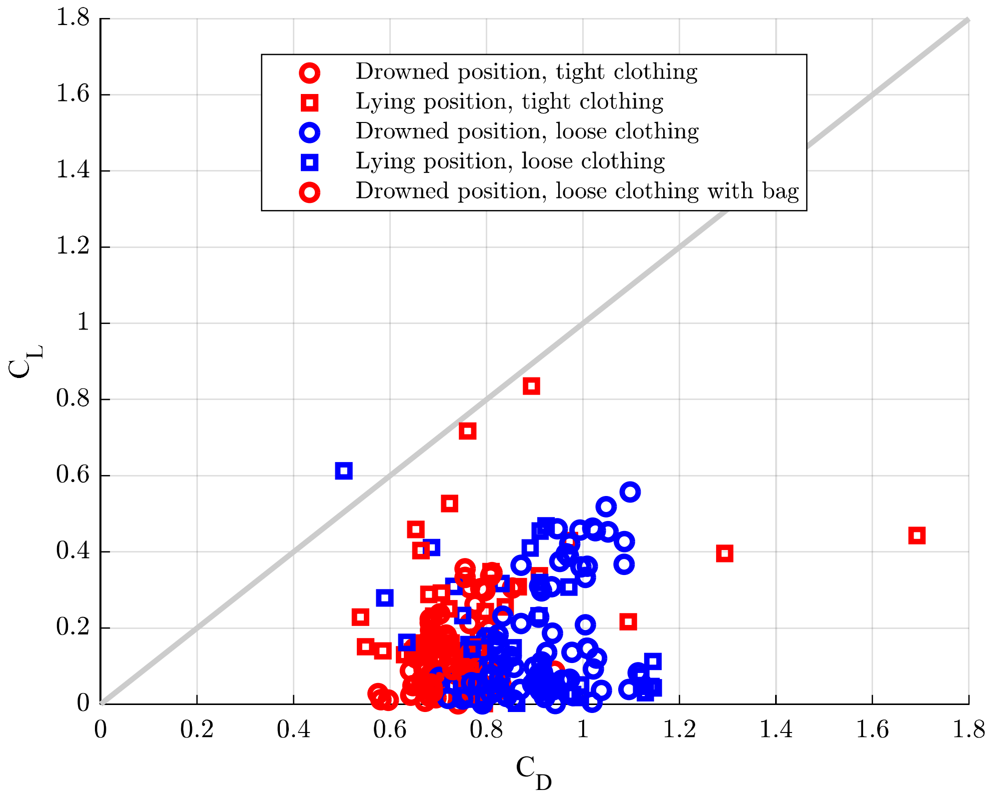


Figure 25: Lift coefficient as a function of yaw angle in the tested configurations. The markers face colour refers to the Reynolds number considered in each test. Empty markers: Re = 4.3 × 10⁵, light plain markers: Re = 6.1 × 10⁵, and dark plain markers: Re = 8.8 × 10⁵.



(a)



(b)

Figure 26: (a) Side and (b) lift coefficient as a function of the drag coefficient for the same configuration and Reynolds number.

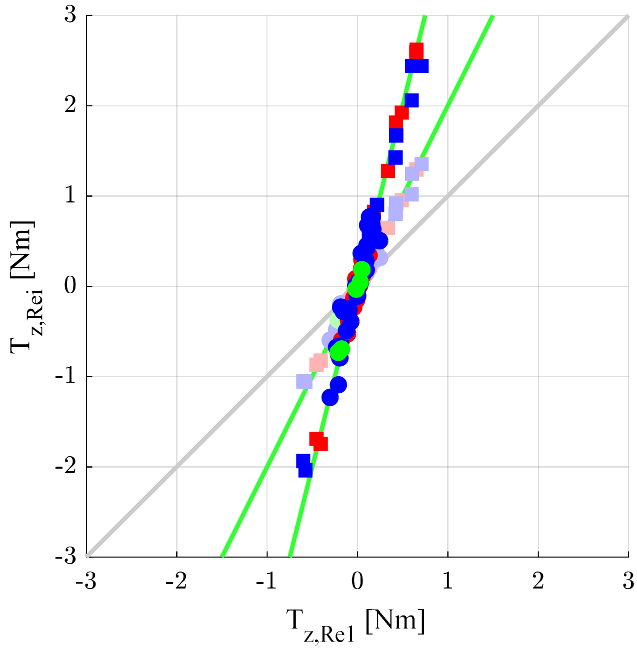


Figure 27: Torque in the vertical direction as a function of torque at the slowest wind velocity. Square markers represent the lying position while circular ones correspond to the drowned position (as described in Section 2.3). The marker face colour refers to the Reynolds number: shaded colours for Re = 6.1 $\times$ 10[5] and plain colours for Re = 8.8 $\times$ 10[5].

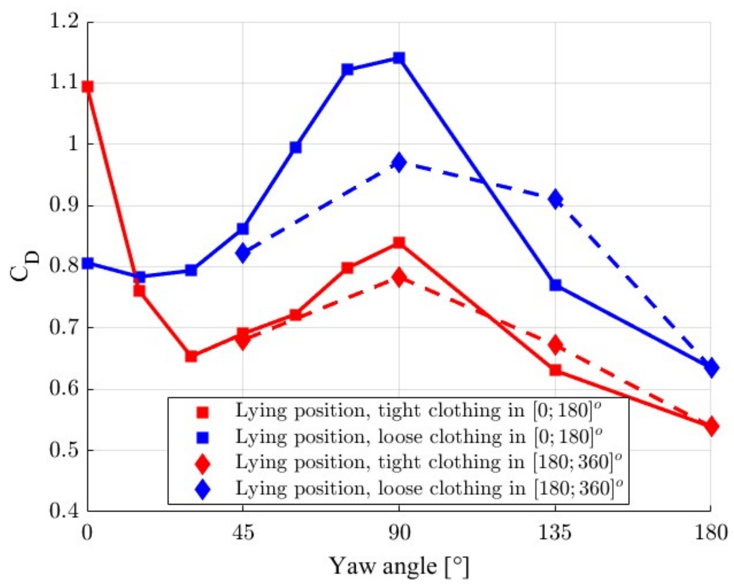


Figure 28: Drag coefficient as a function of yaw angle in lying position. Squares and plane lines correspond to the body between 0° and 180° while diamonds and dashed correspond to the mentioned angle taken symmetrically compared to the axis 0-180°. With for example diamond at 135° refers without considering the symmetry of the body.

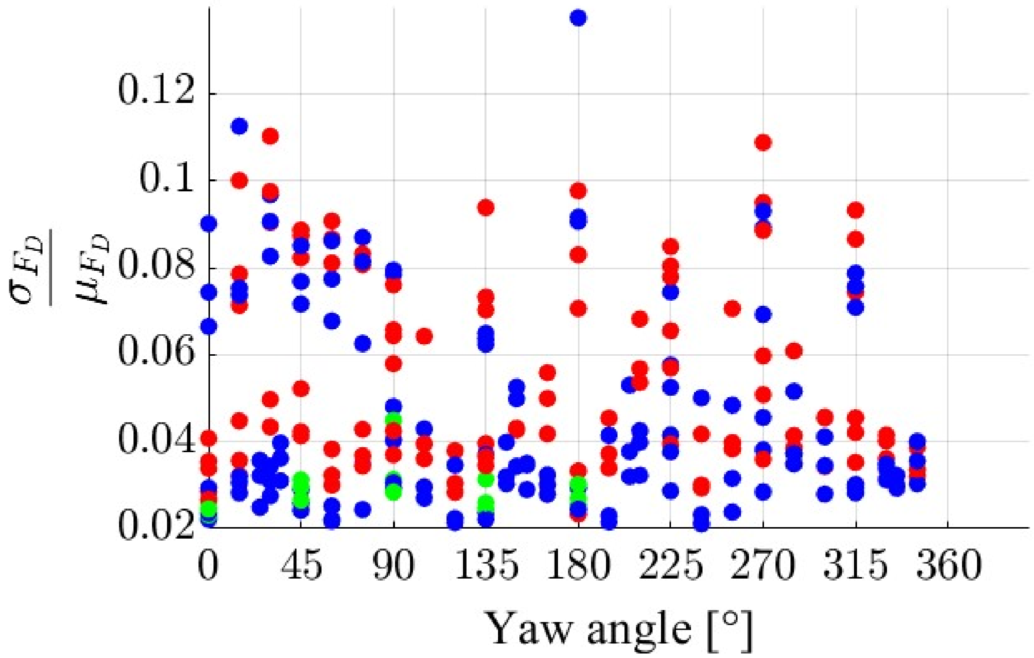


Figure 29: Standard deviation of F_x divided by the corresponding average of F_x.

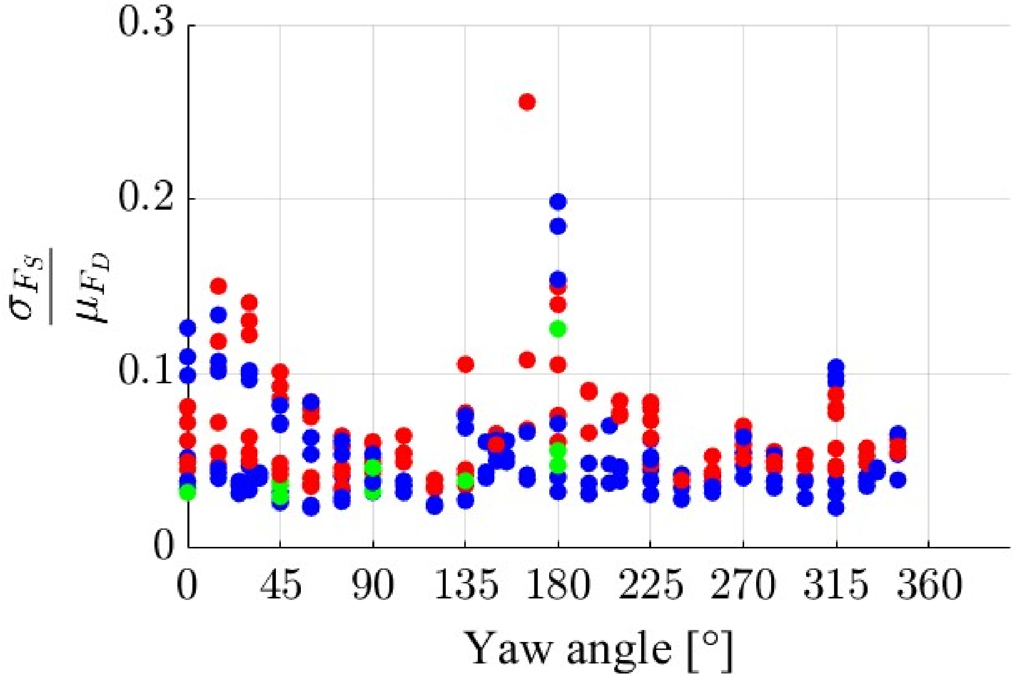


Figure 30: Standard deviation of F_y divided by the corresponding average of F_x.

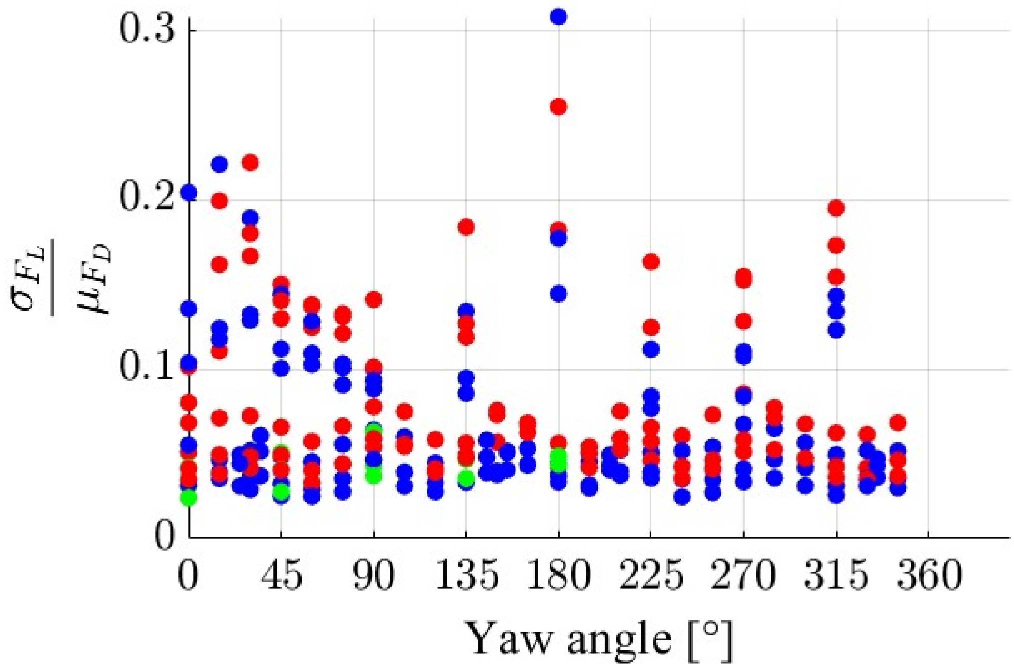


Figure 31: Standard deviation of F_z divided by the corresponding average of F_x.