



Appendix

D Instantaneous velocity measurements

This on-line appendix is related to EPFL thesis 8322 (DOI: 10.5075/epfl-thesis-8322) and contains the instantaneous velocity measurements recorded with the ADVP at some points along the vertical. Both streamwise and vertical components of the velocity are reported for the third group of tests performed (see Table D.1 for details). The measurements here reported are recorded in time at a certain distance from the bottom as defined in Table D.1.

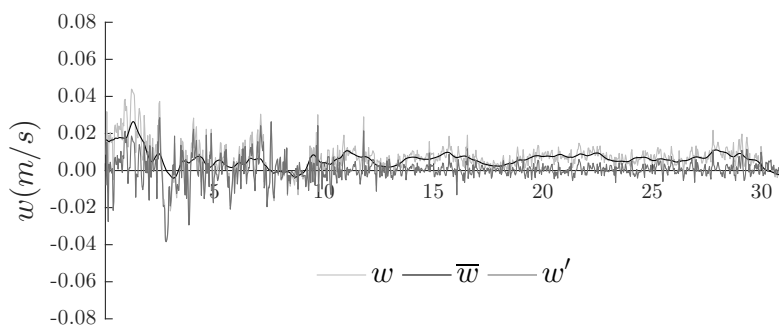
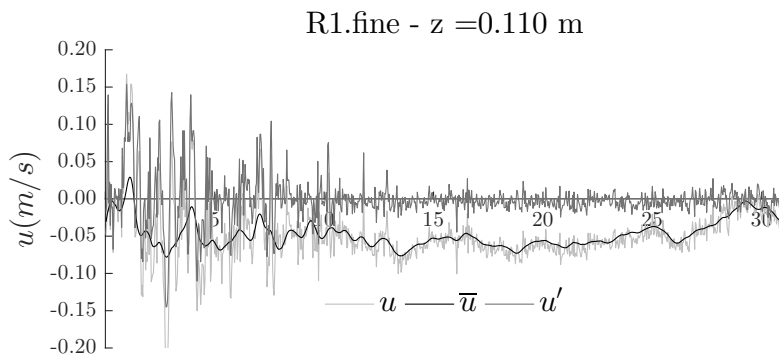
Exp.	ρ_0 (kg/m^3)	g' (m^2/s)	z (m)
			0.110
			0.101
			0.093
R1.fine	1028	0.29	0.085
R1.medium	1028	0.29	0.076
R1.coarse	1028	0.29	0.068
R2.fine	1038	0.39	0.060
R2.medium	1038	0.39	0.052
R2.coarse	1038	0.39	0.044
R3.fine	1048	0.49	0.036
R3.medium	1048	0.49	0.028
R3.coarse	1048	0.49	0.020
			0.012
			0.004

Table D.1: Experimental parameters of the tests whose raw data are reported in this Appendix (ρ_0 is the initial density of the mixture in the upstream tank (measured with a densimeter) and g' is the reduced gravity corresponding to ρ_0) and distance from the bottom of the records.

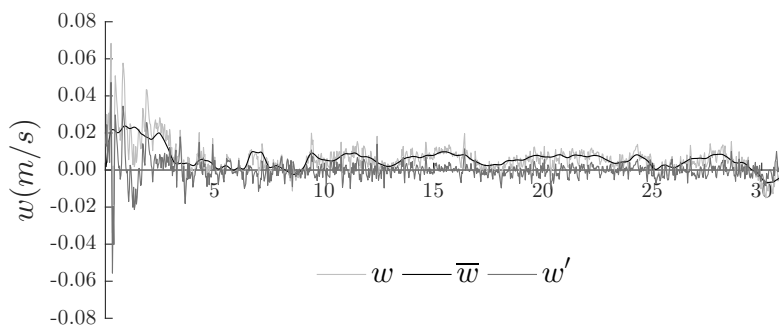
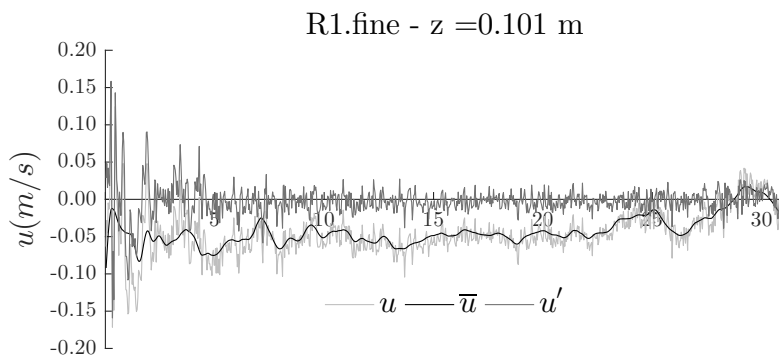
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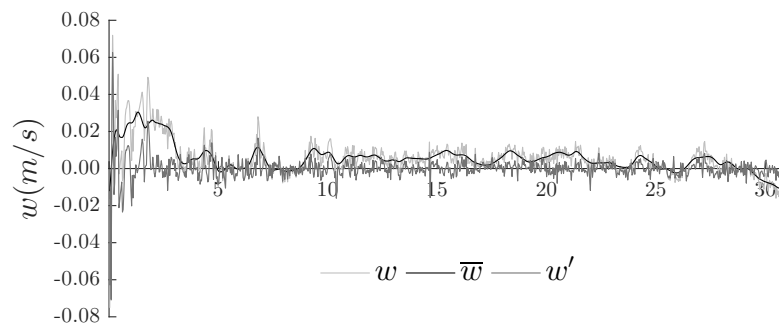
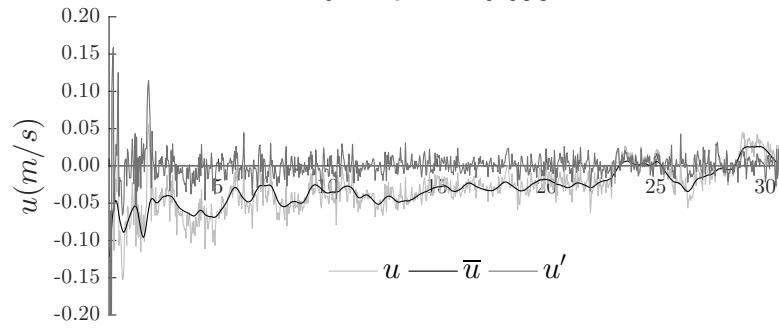


Time(s)



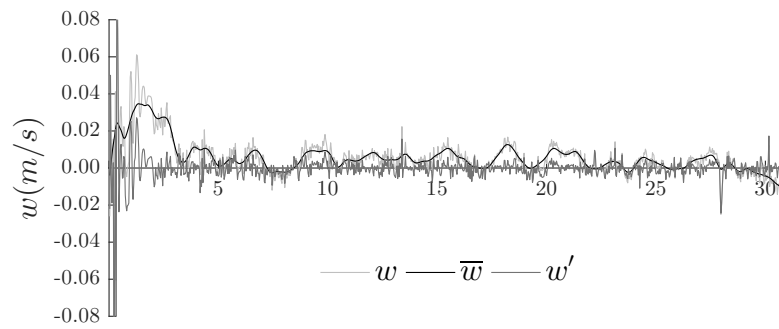
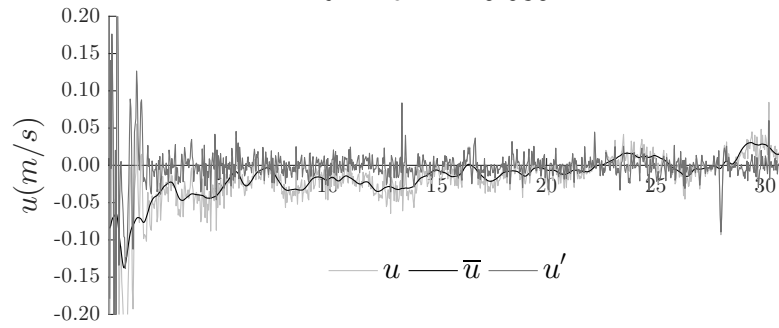
Time(s)

R1.fine - z =0.093 m



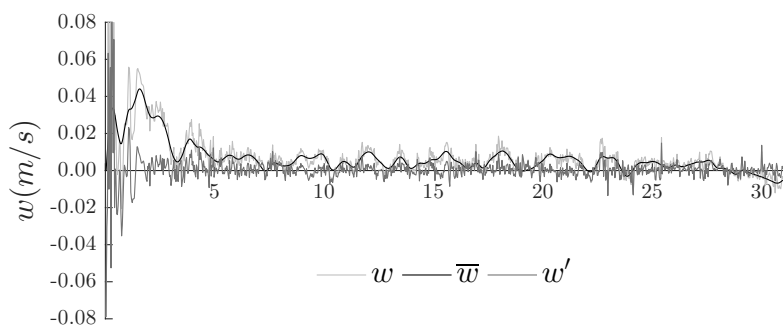
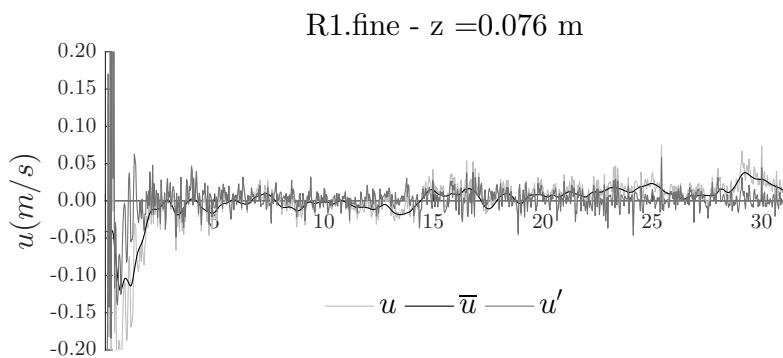
Time(s)

R1.fine - z =0.085 m

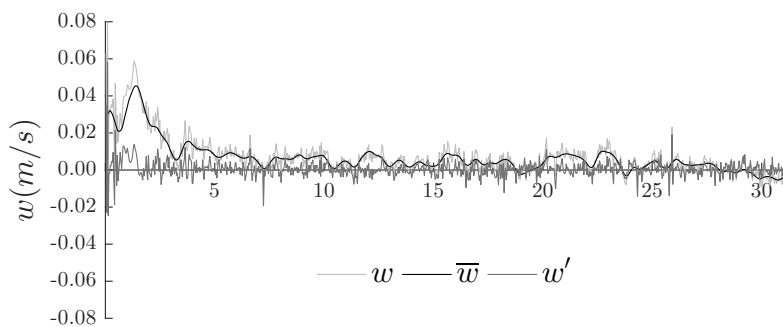
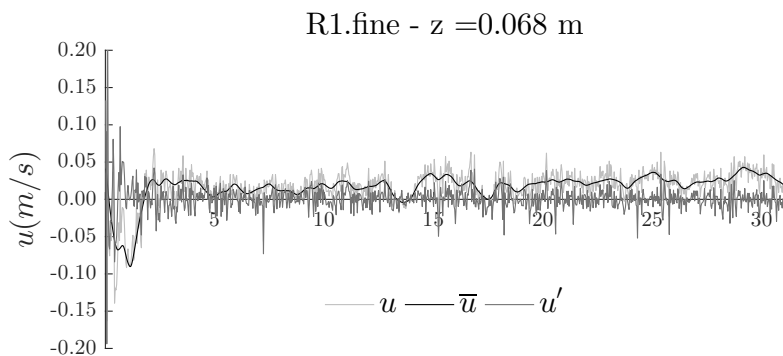


Time(s)

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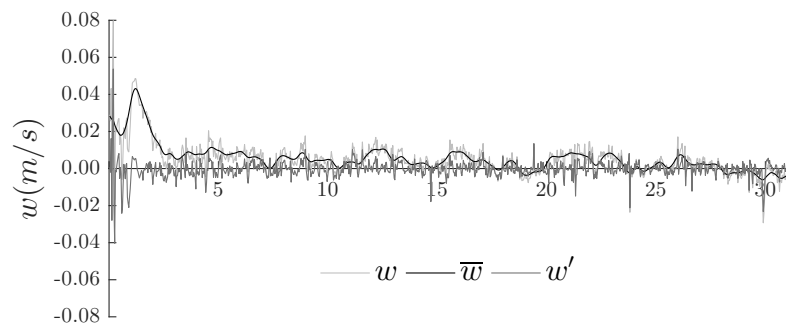
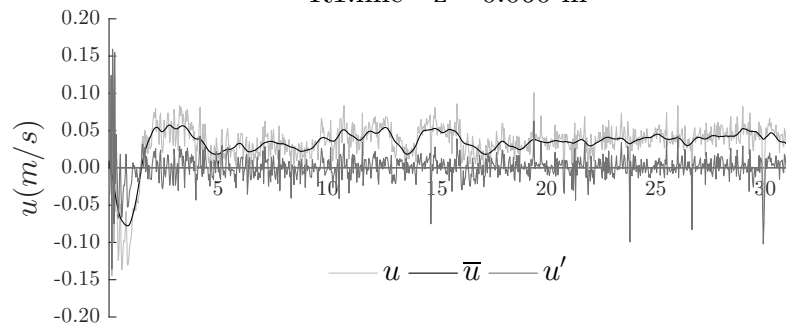


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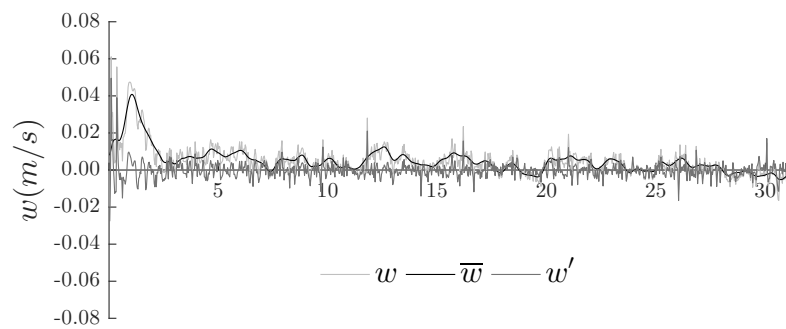
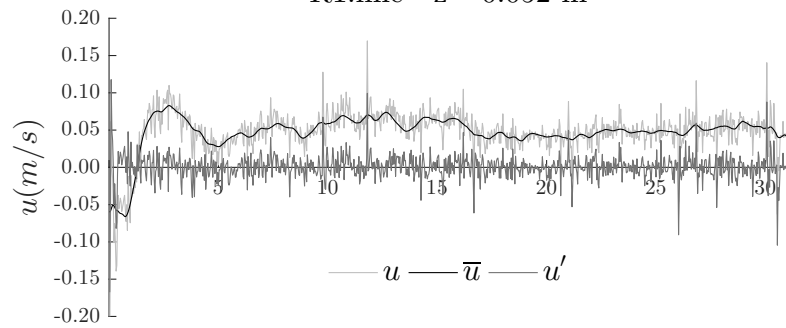
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R1.fine - $z = 0.060$ m



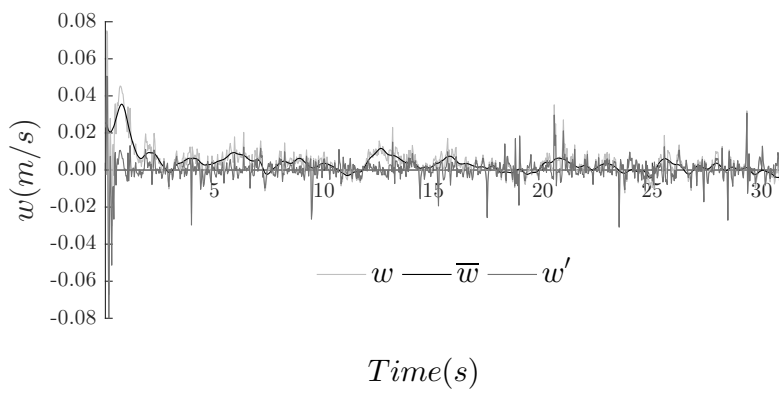
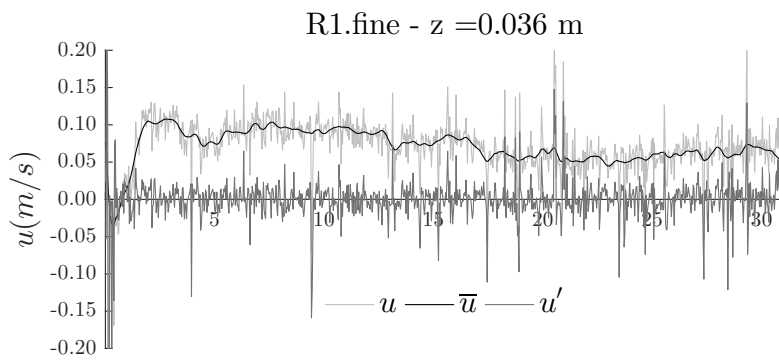
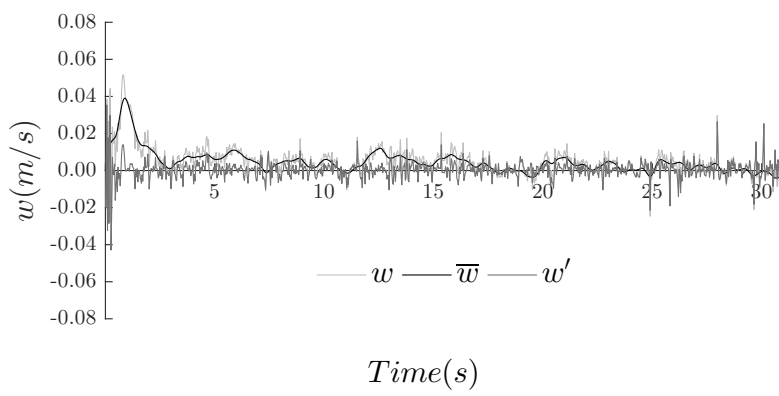
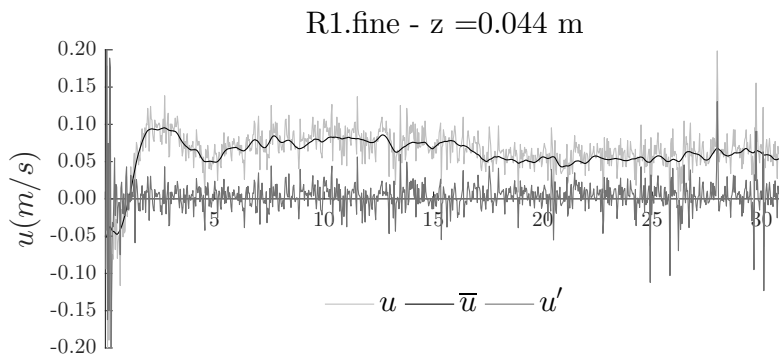
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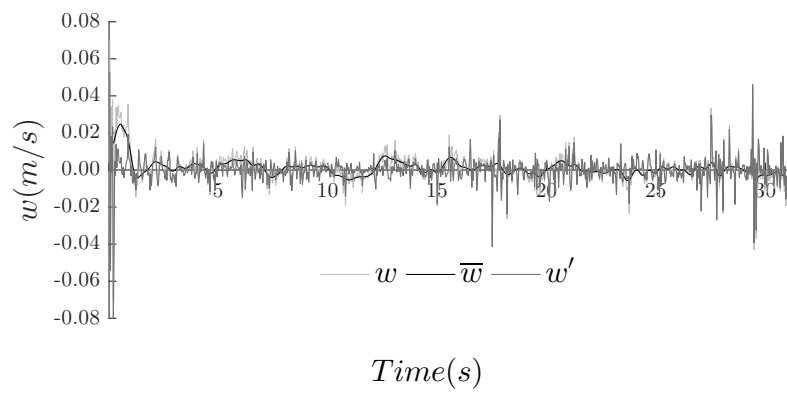
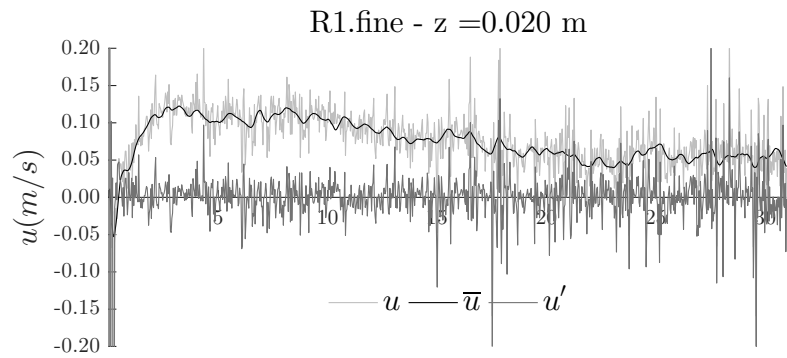
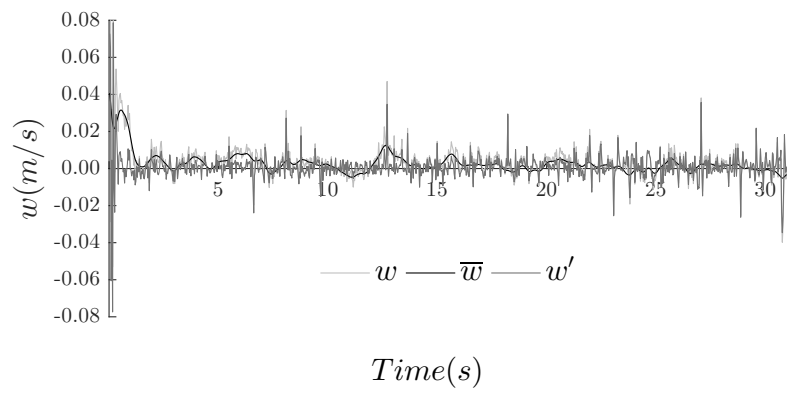
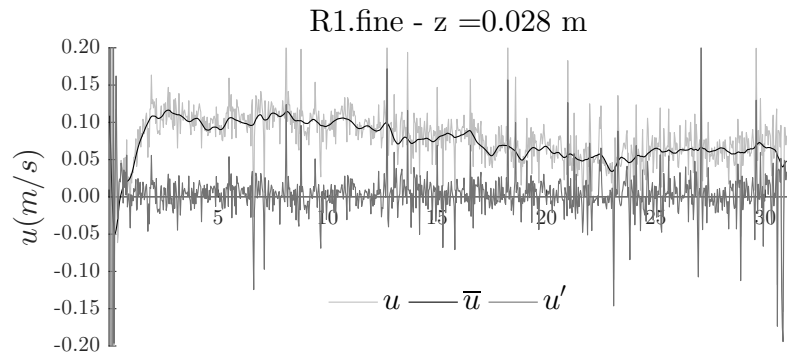
R1.fine - $z = 0.052$ m



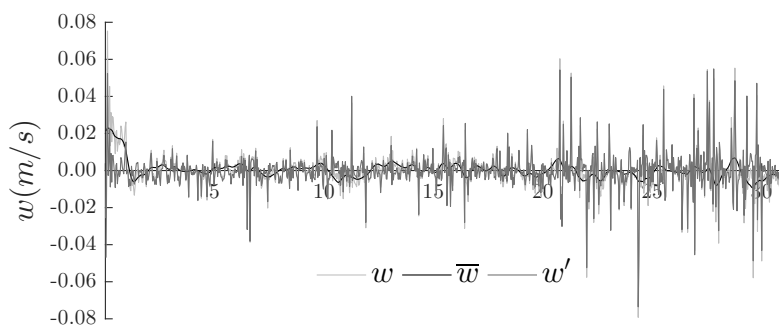
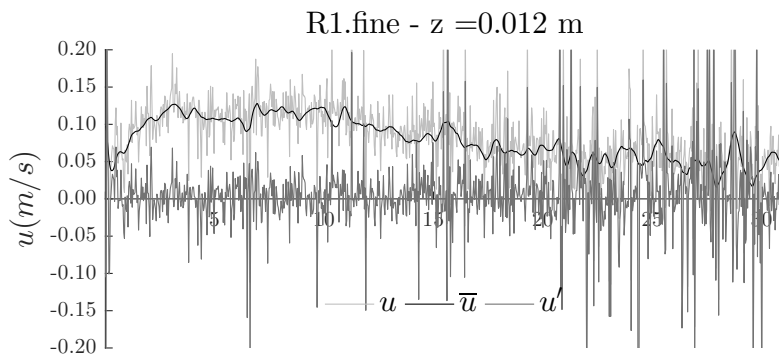
Time(s)

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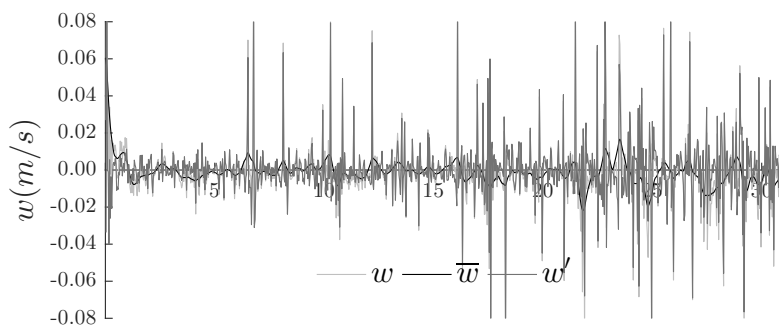
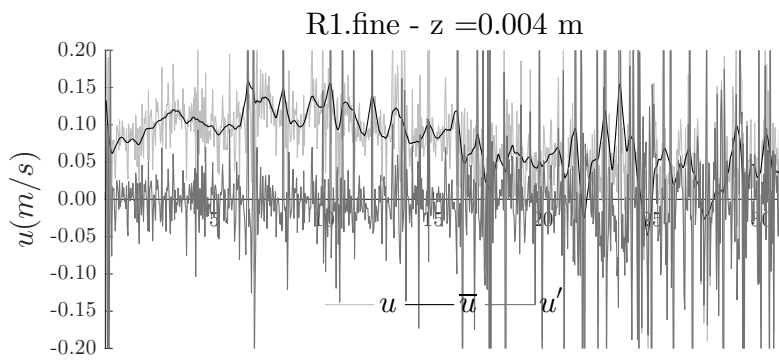




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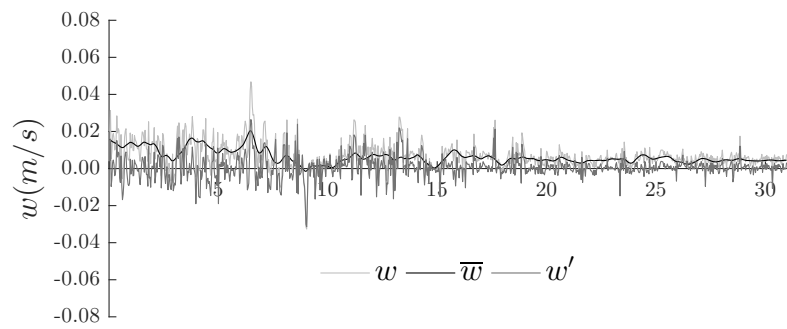
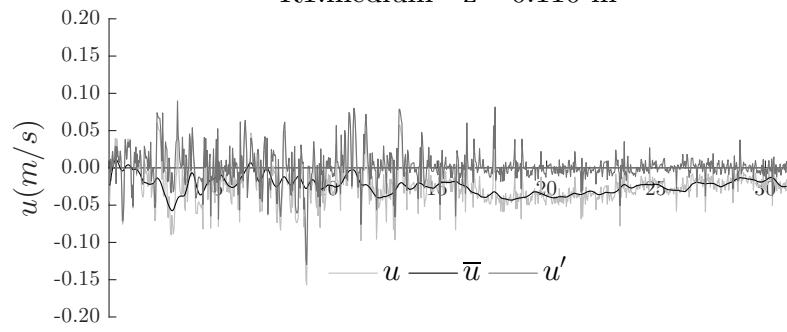


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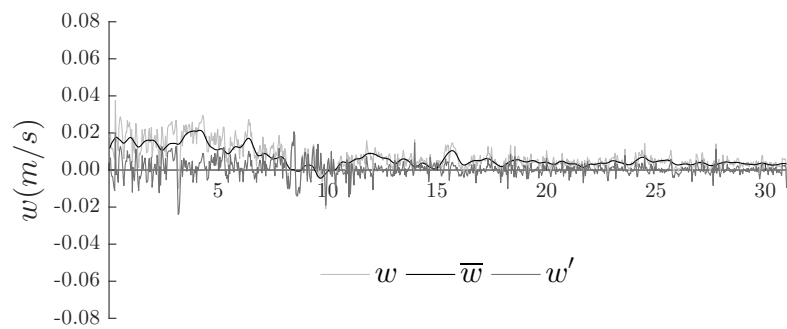
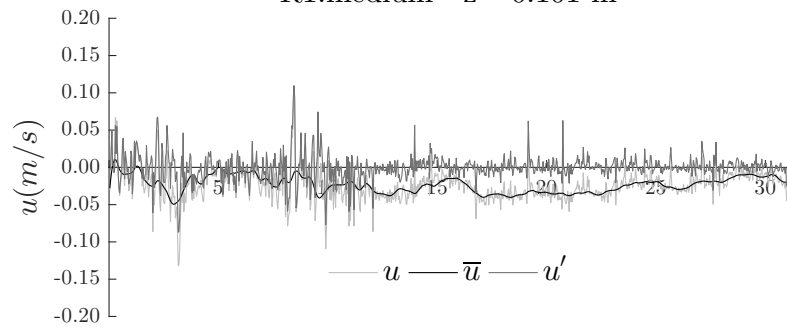
Time(s)

R1.medium - z =0.110 m



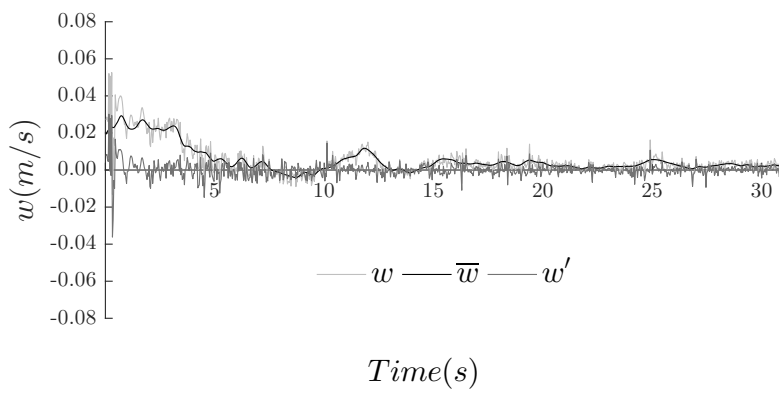
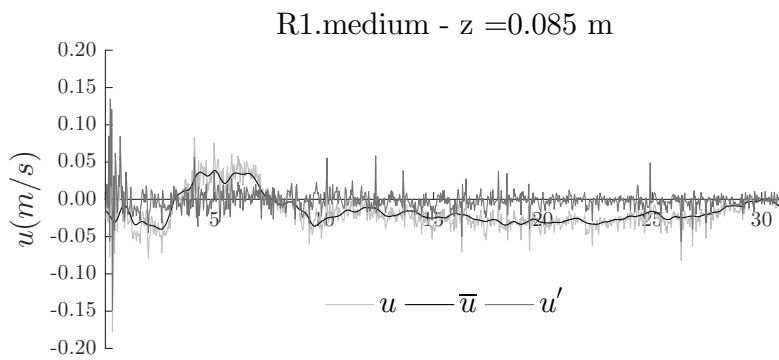
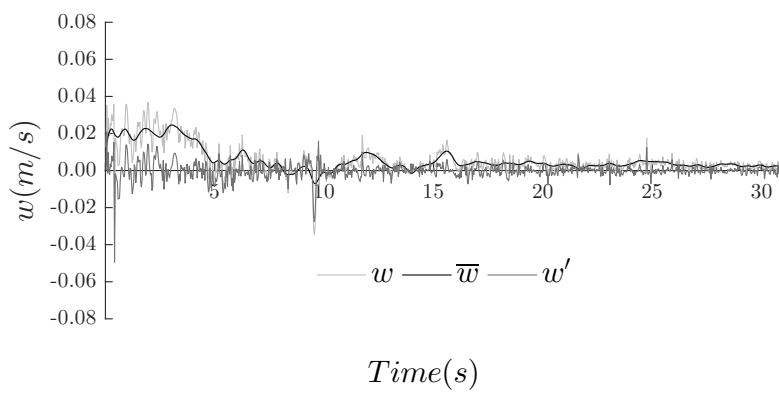
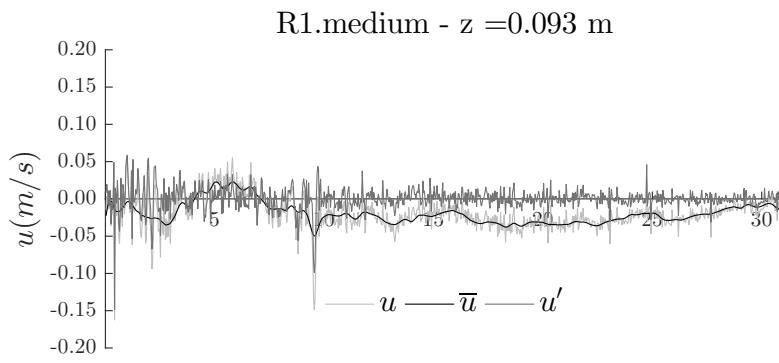
Time(s)

R1.medium - z =0.101 m

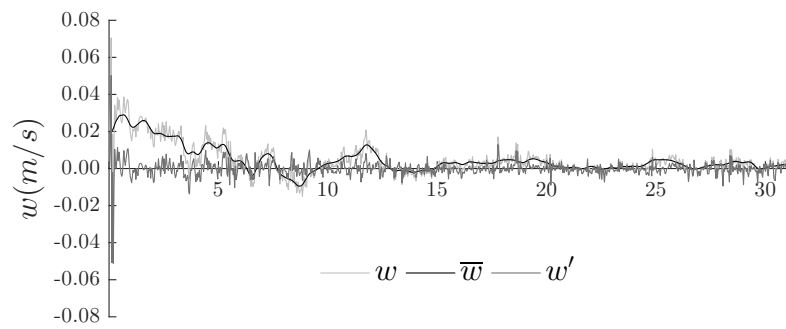
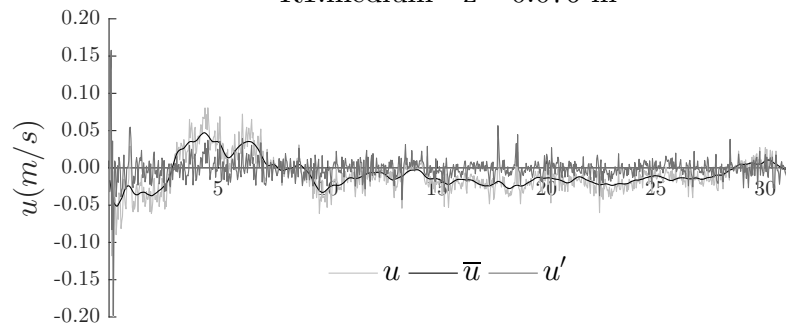


Time(s)

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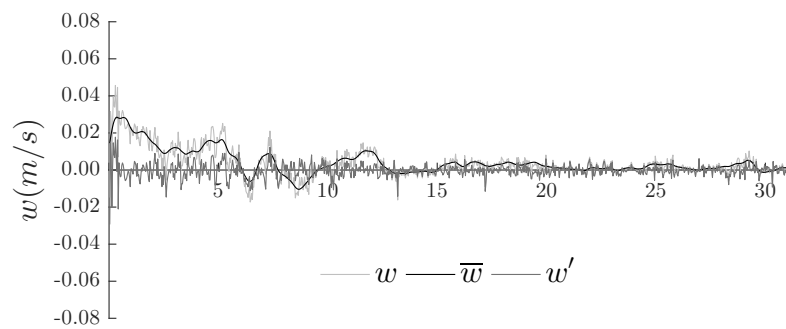
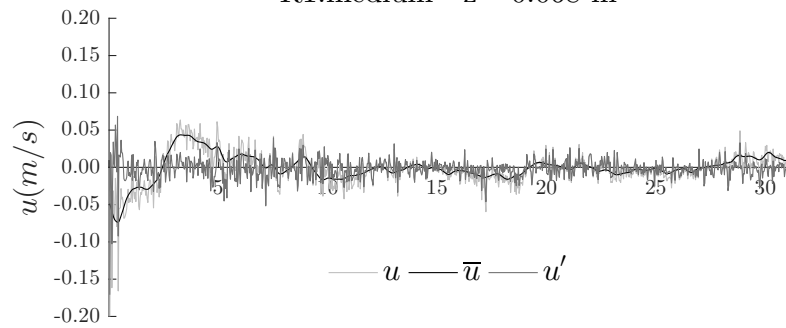


R1.medium - z =0.076 m



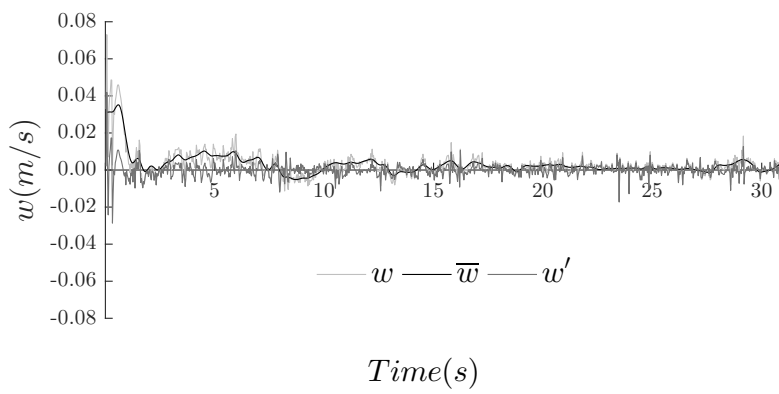
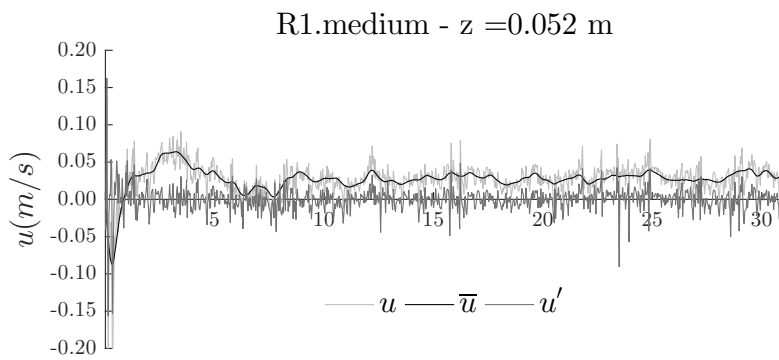
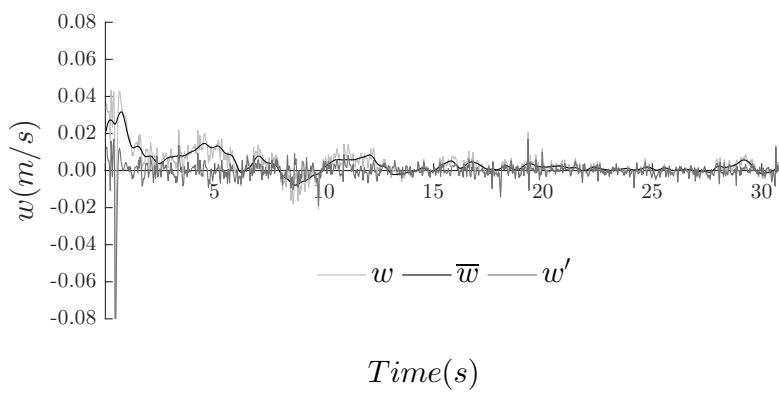
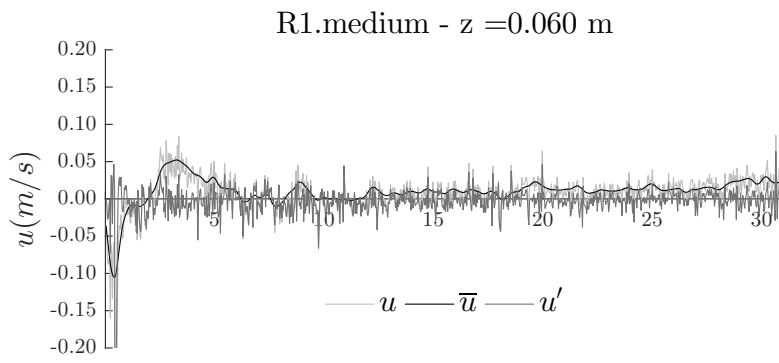
Time(s)

R1.medium - z =0.068 m

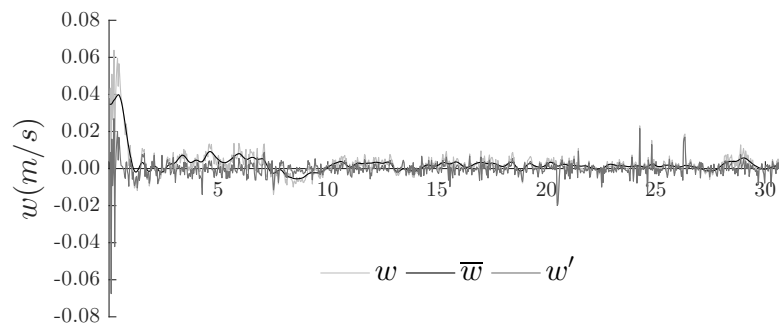
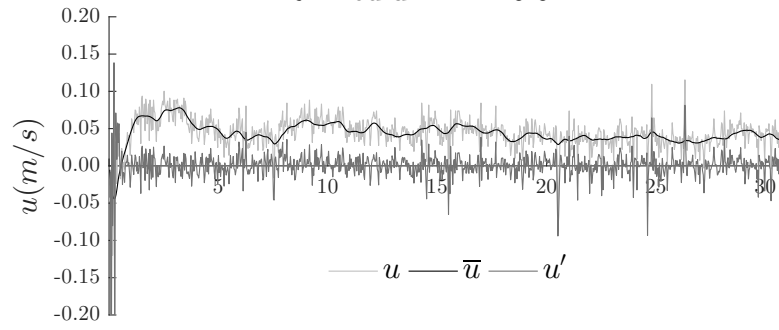


Time(s)

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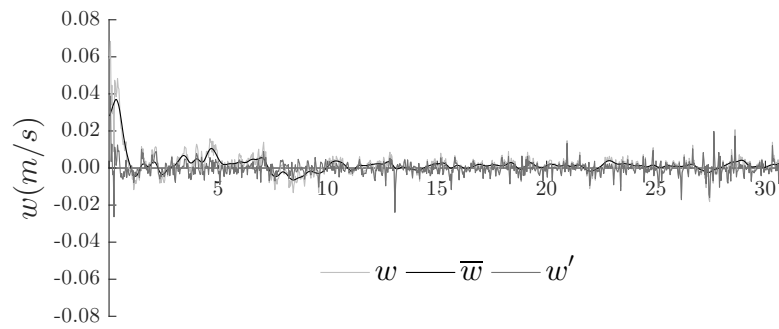
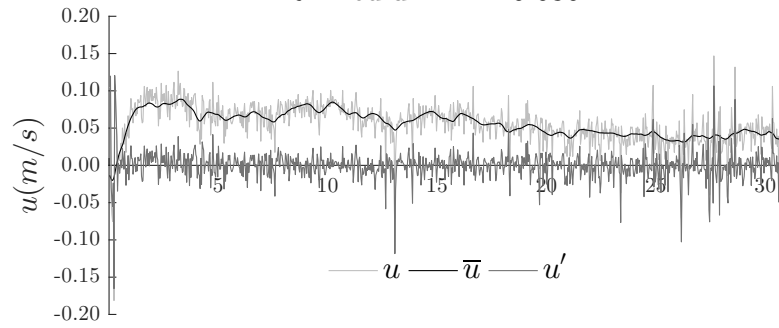


R1.medium - z =0.044 m



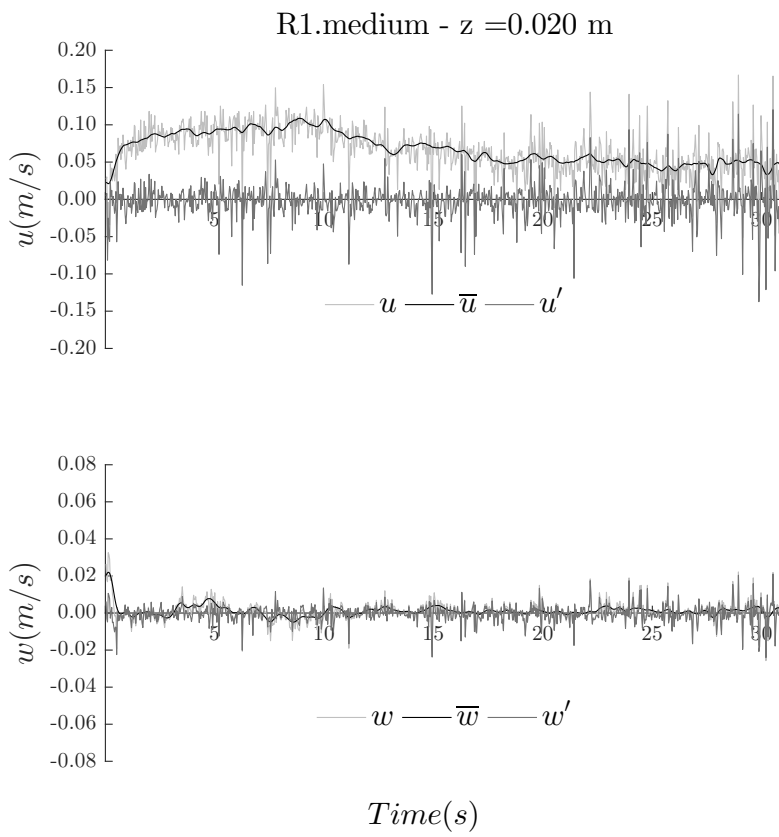
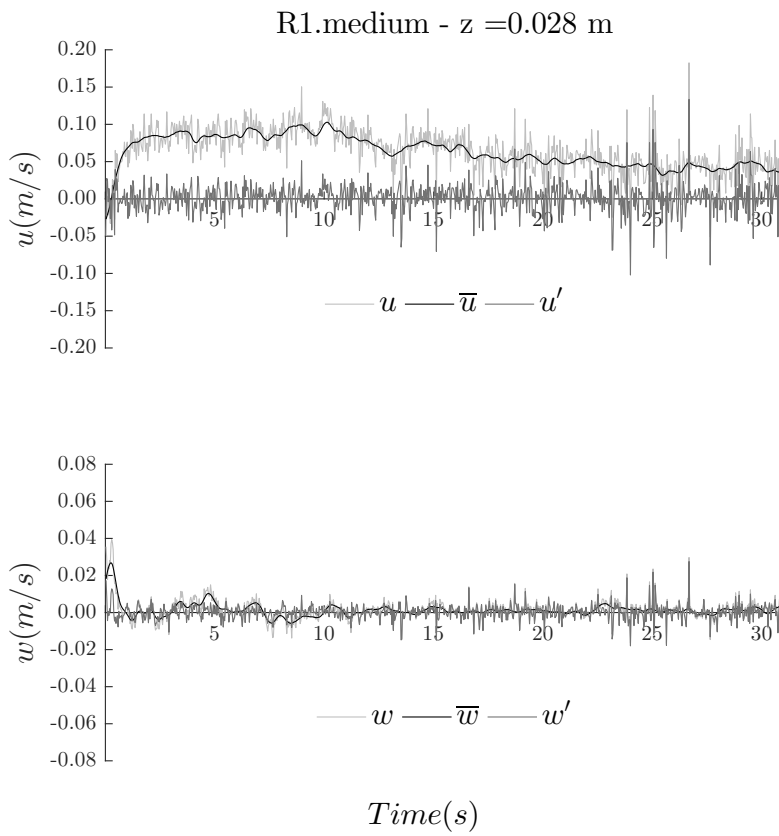
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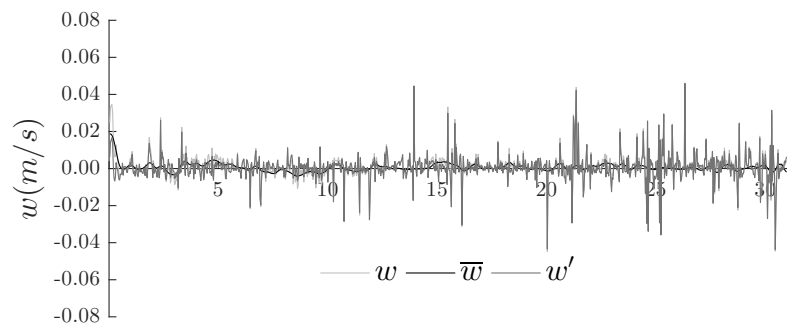
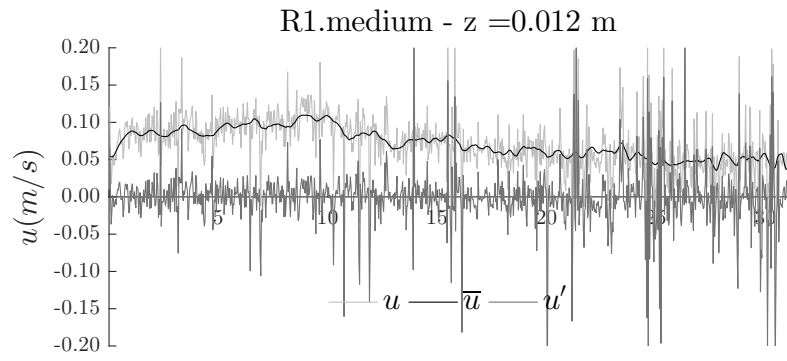
R1.medium - z =0.036 m



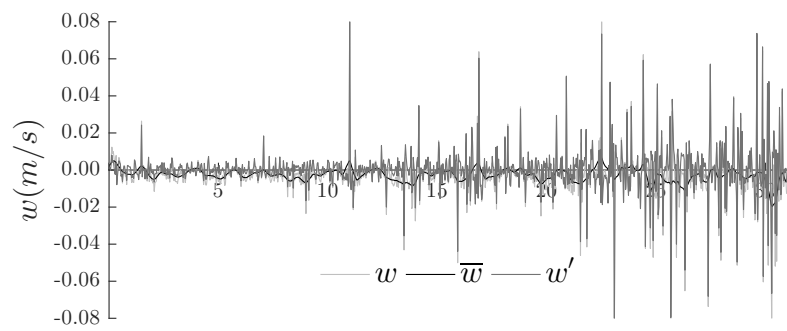
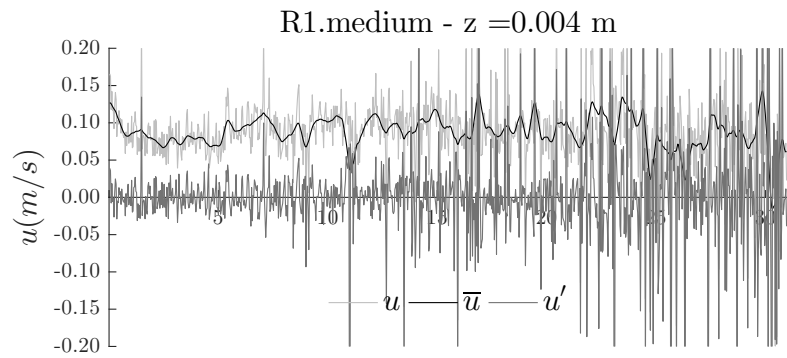
Time(s)

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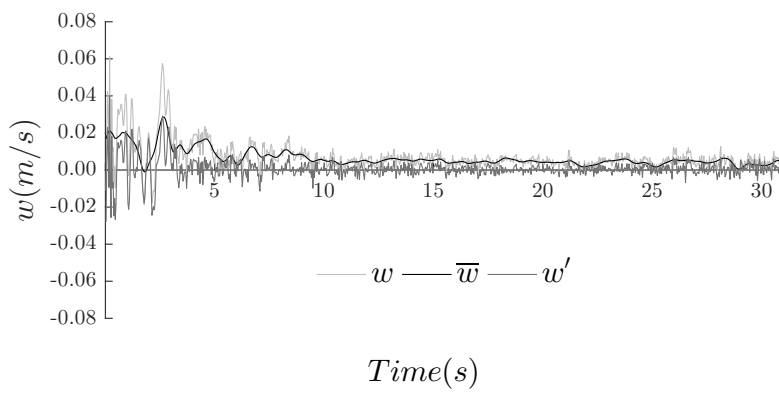
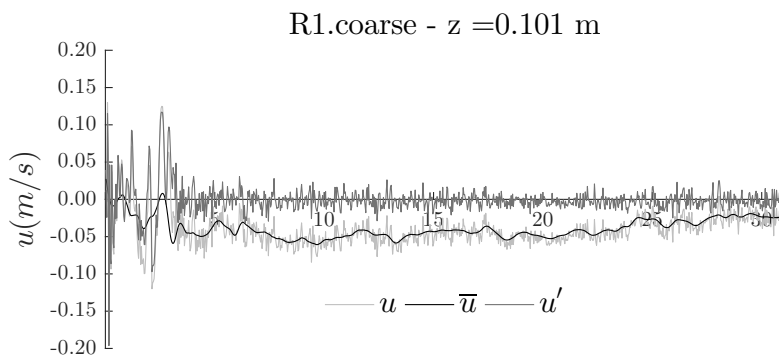
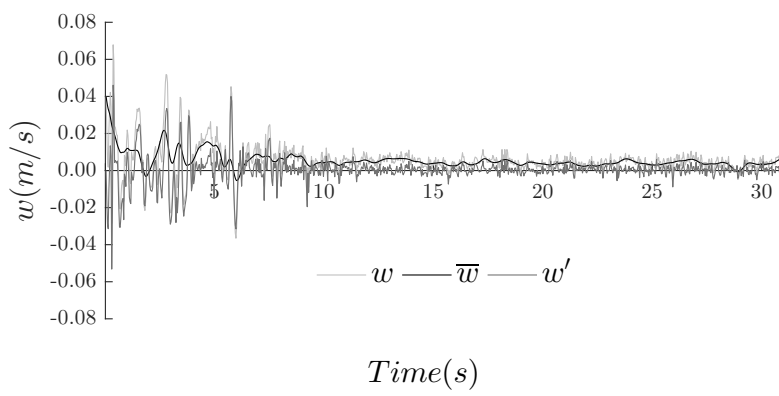
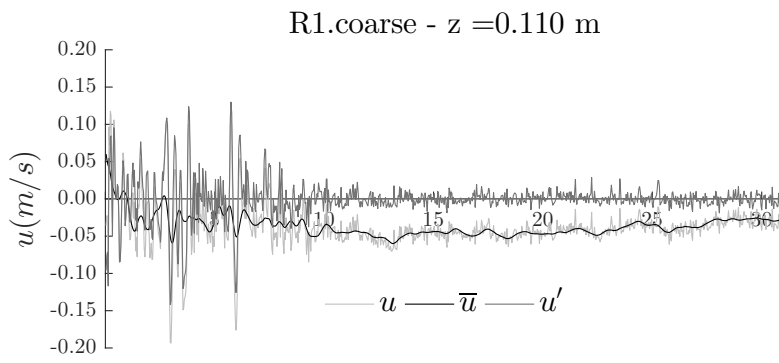


Time(s)

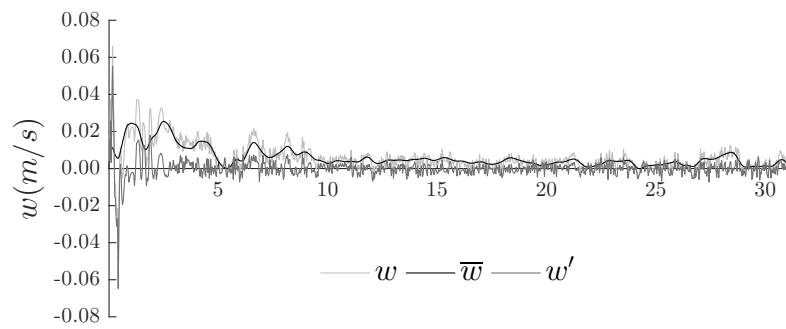
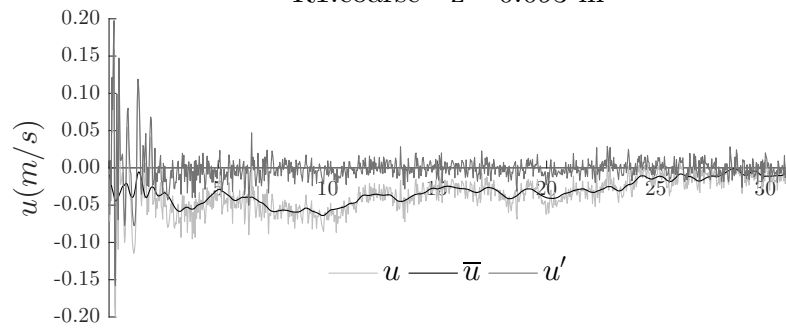


Time(s)

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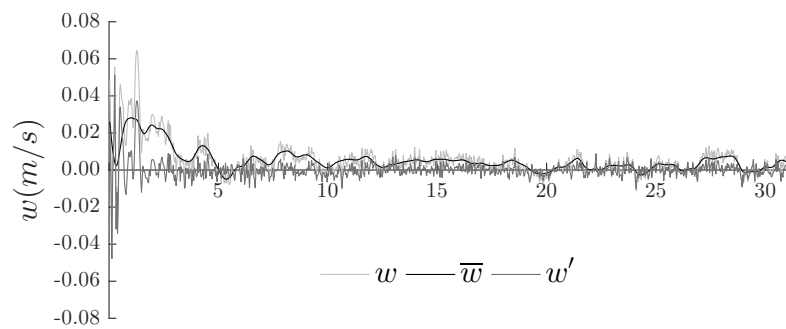
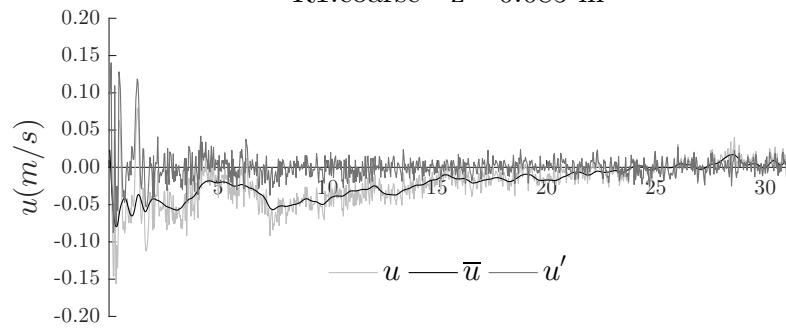


R1.coarse - z =0.093 m



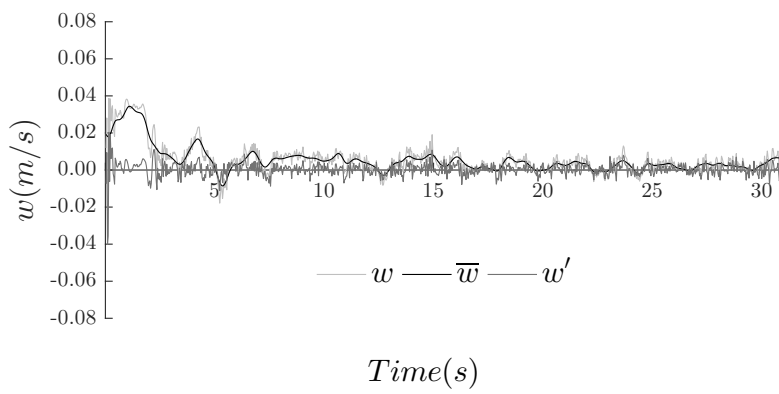
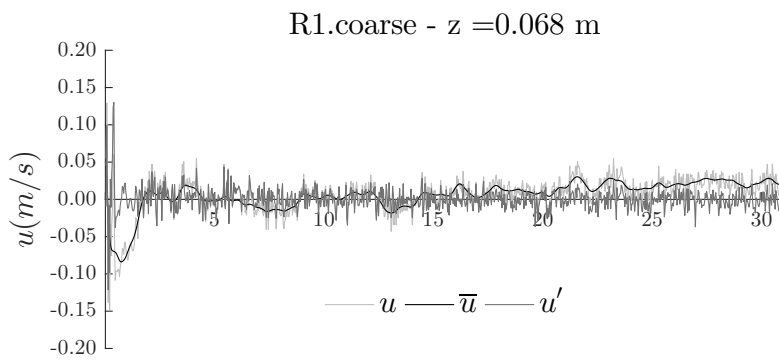
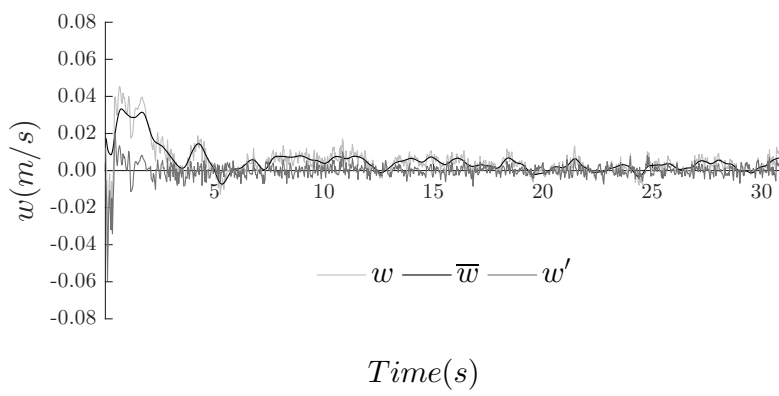
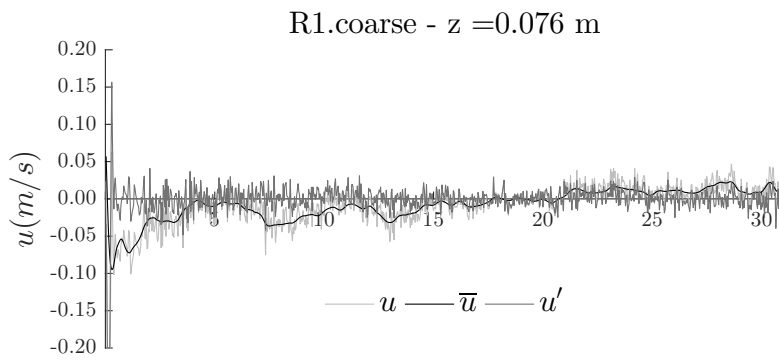
Time(s)

R1.coarse - z =0.085 m

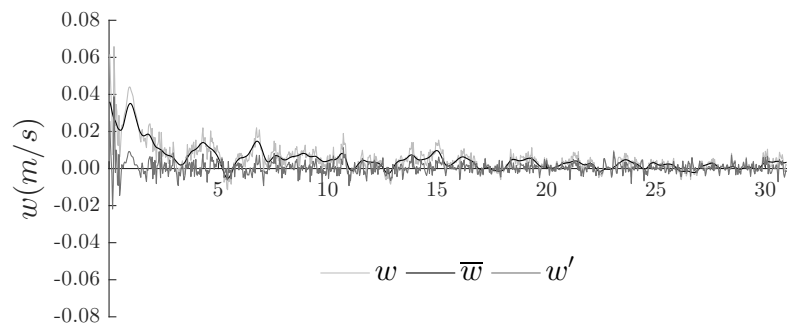
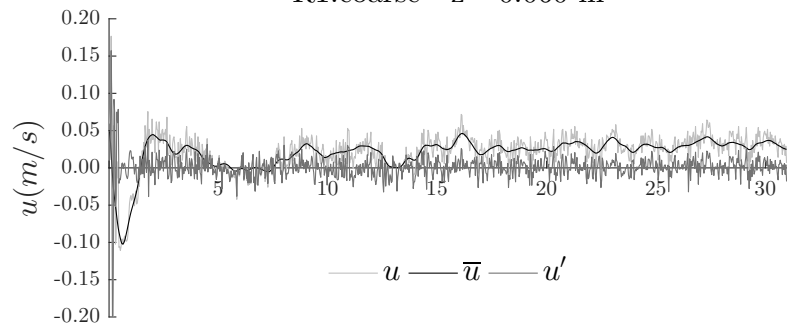


Time(s)

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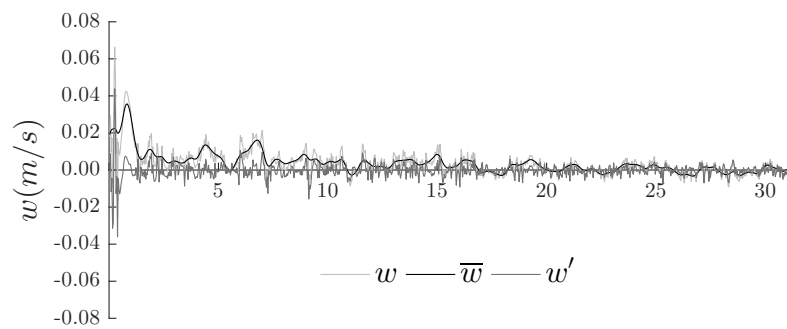
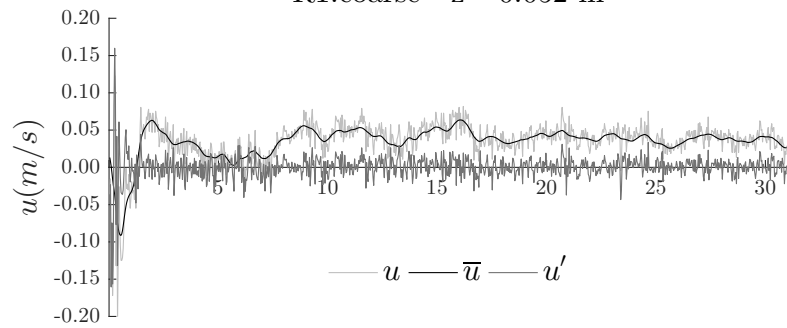


R1.coarse - z =0.060 m



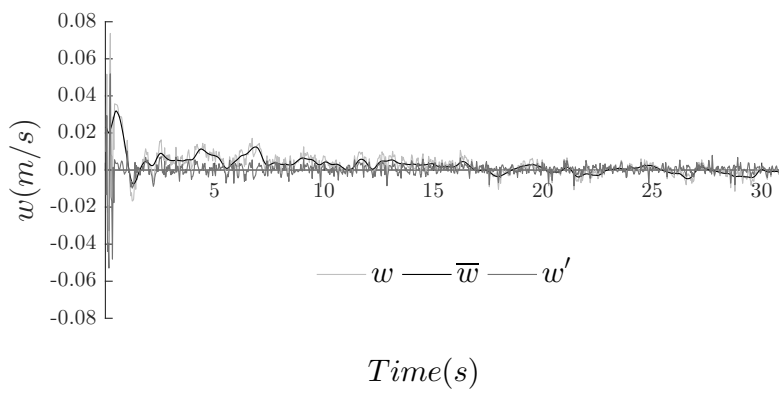
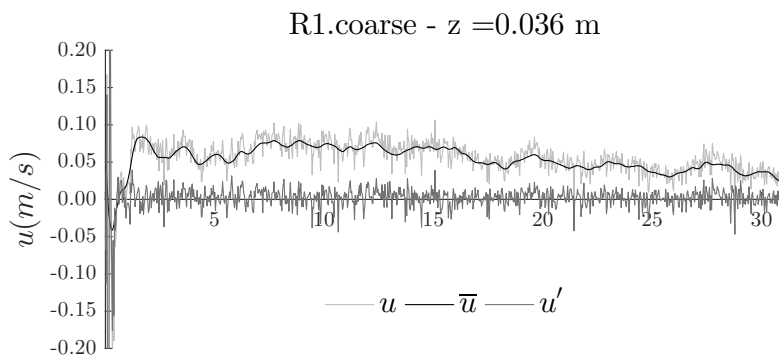
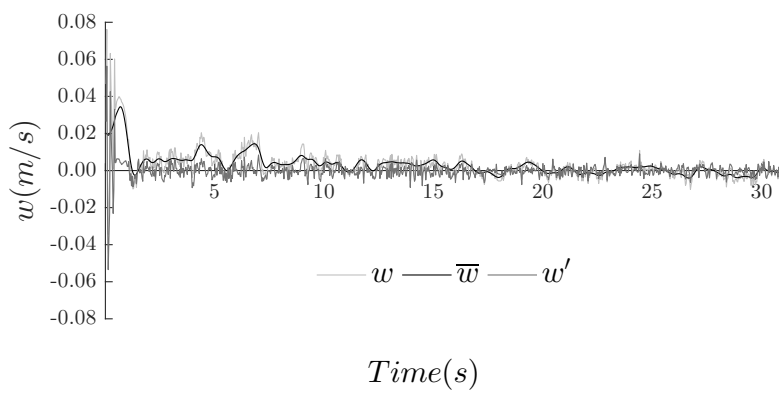
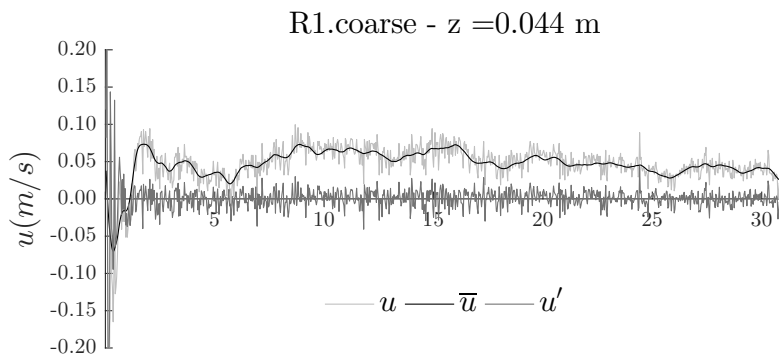
Time(s)

R1.coarse - z =0.052 m

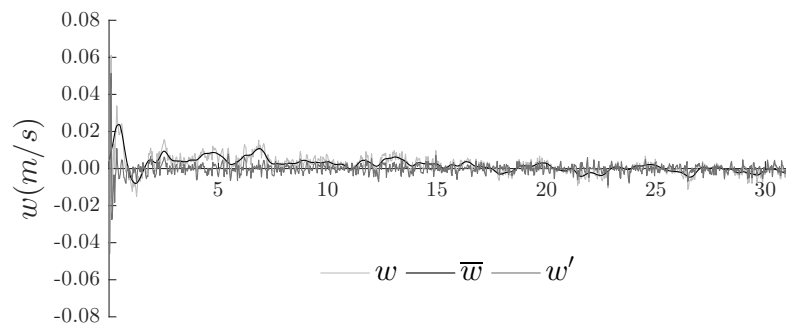
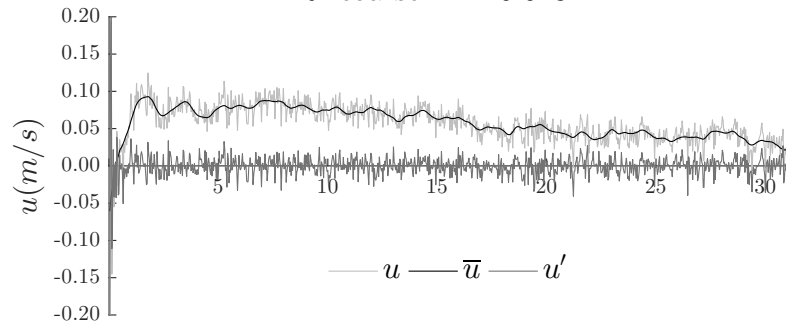


Time(s)

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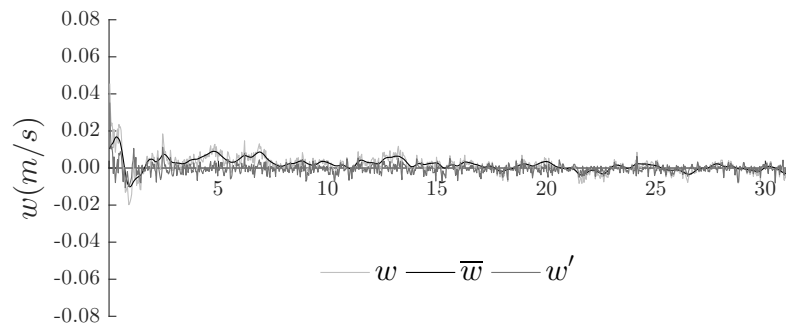
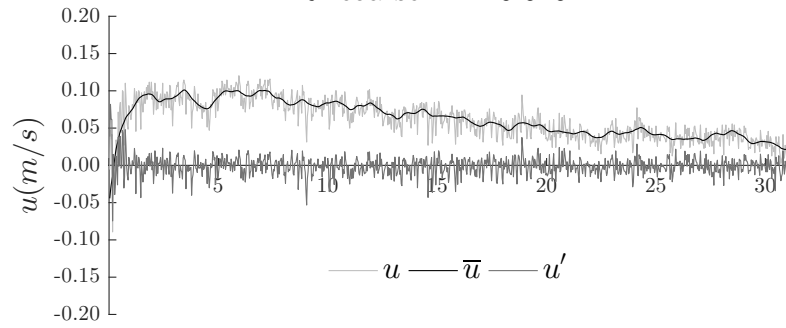


R1.coarse - z =0.028 m



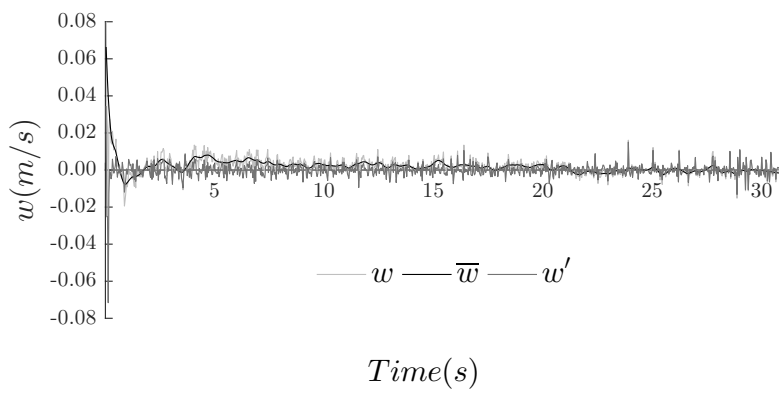
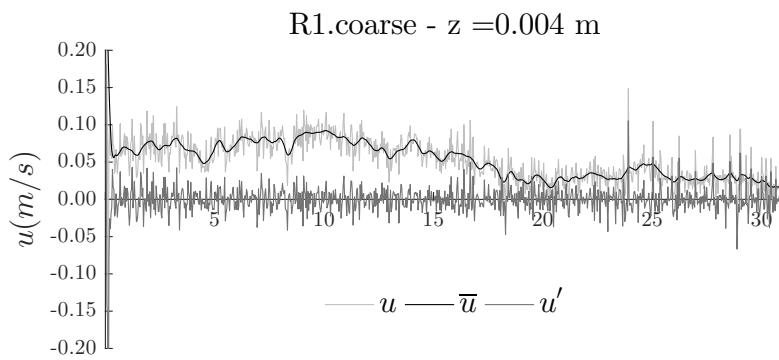
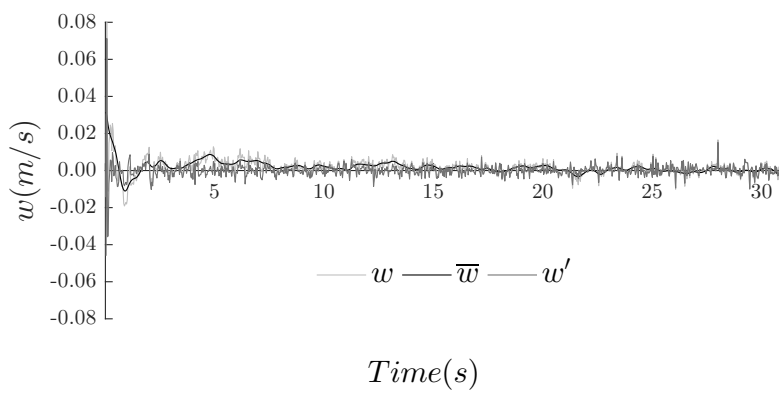
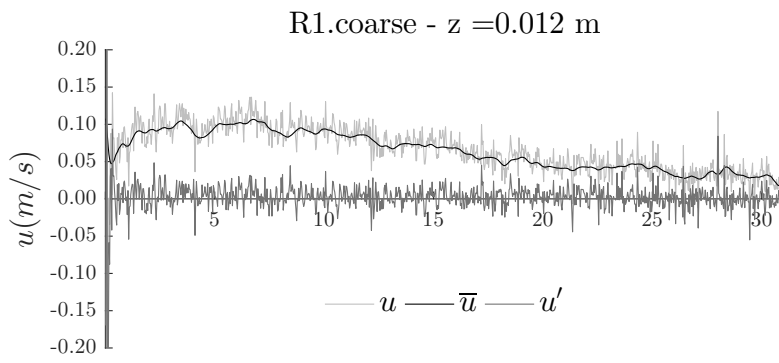
Time(s)

R1.coarse - z =0.020 m

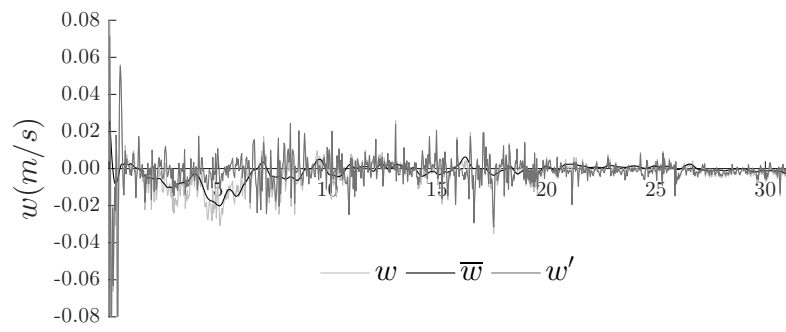
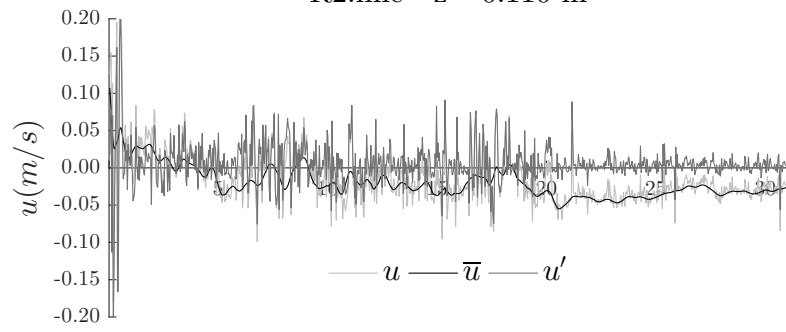


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

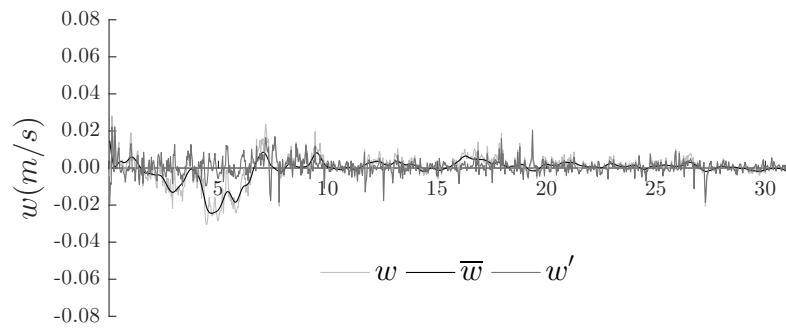
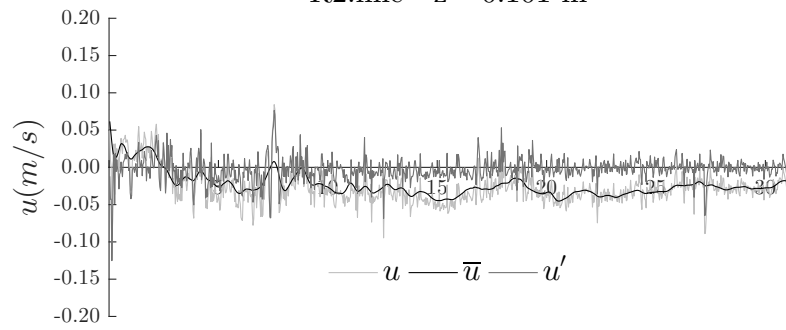


R2.fine - z =0.110 m



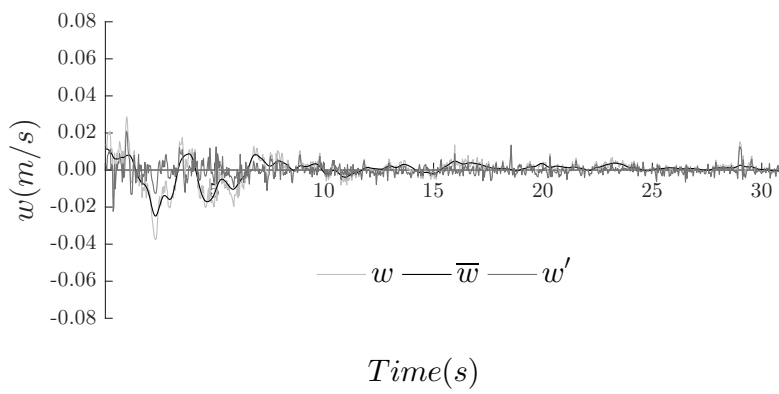
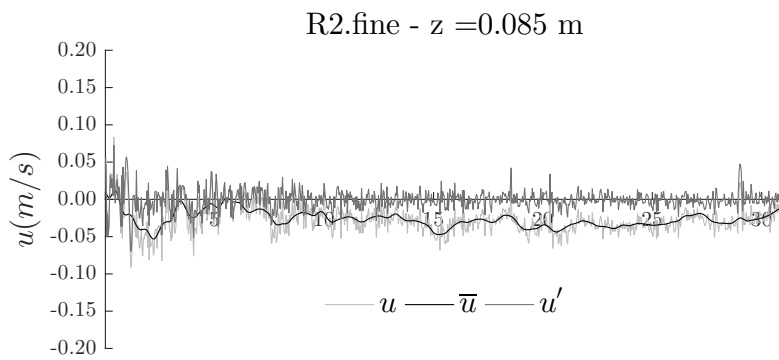
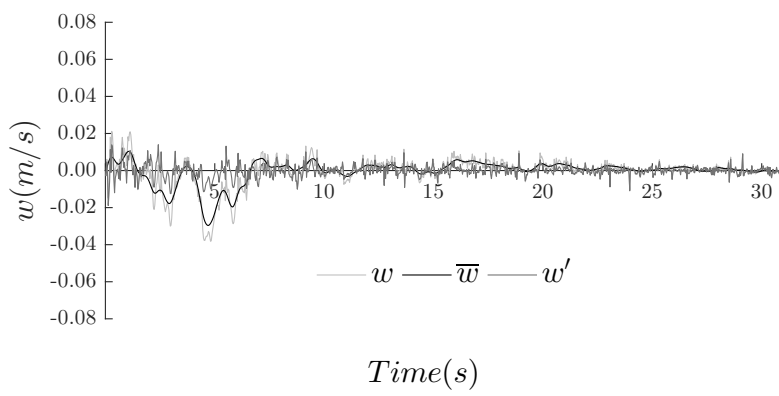
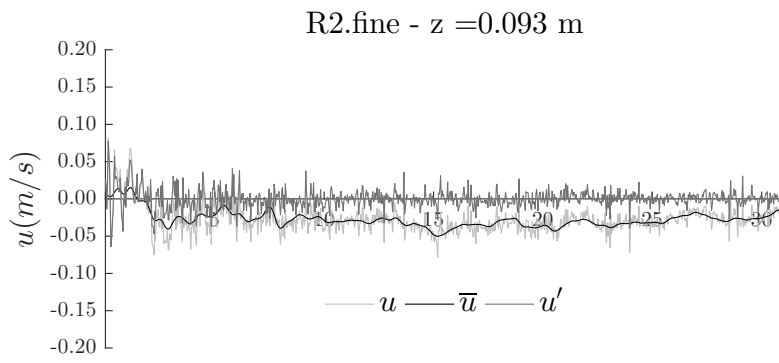
Time(s)

R2.fine - z =0.101 m

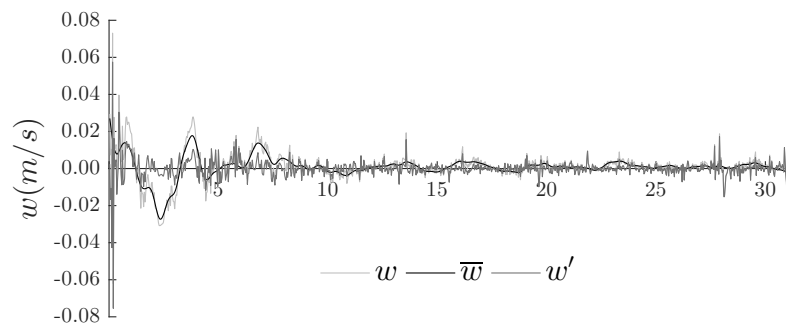
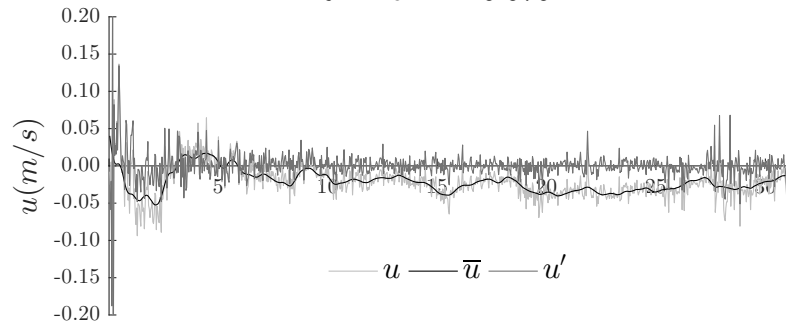


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

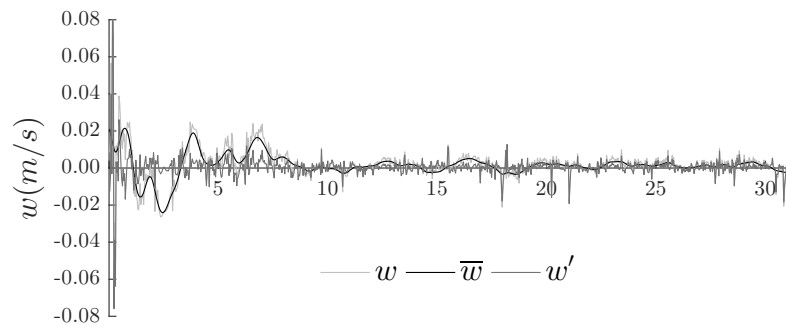
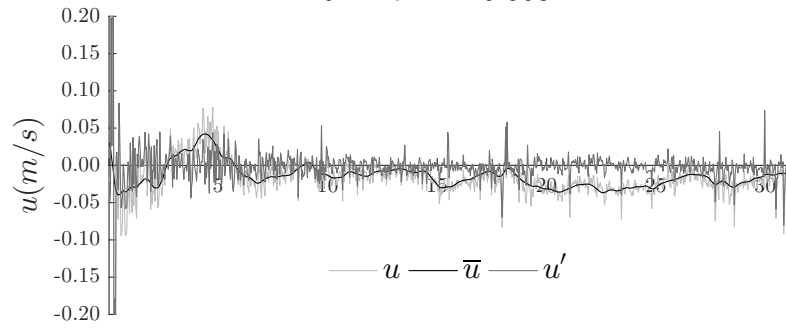


R2.fine - z =0.076 m



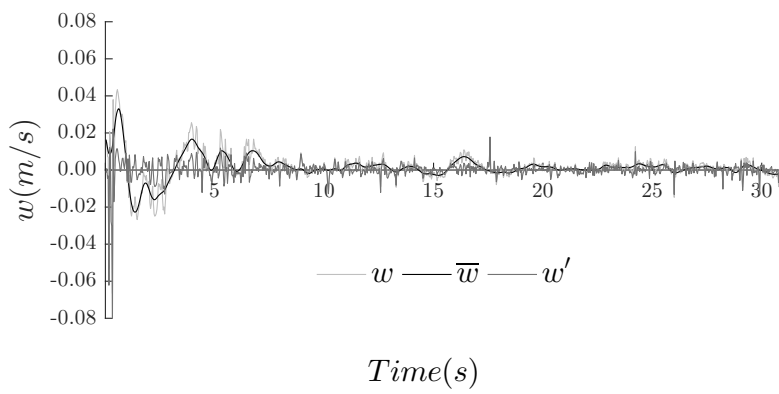
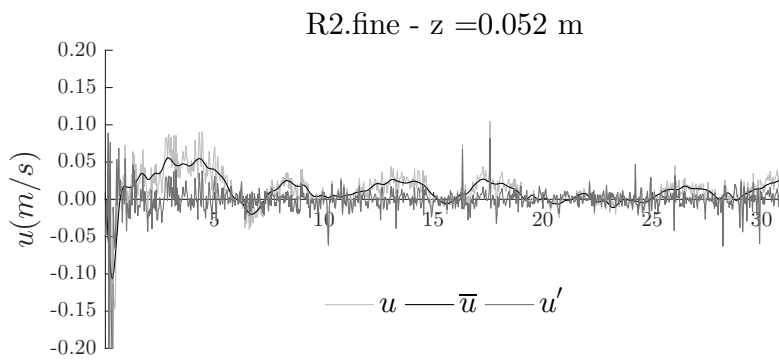
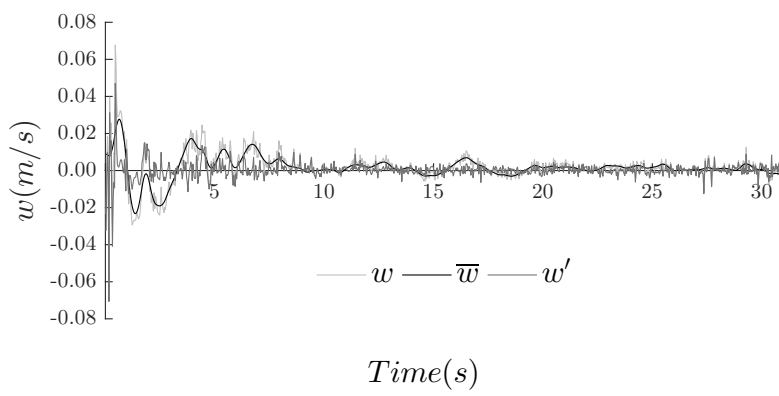
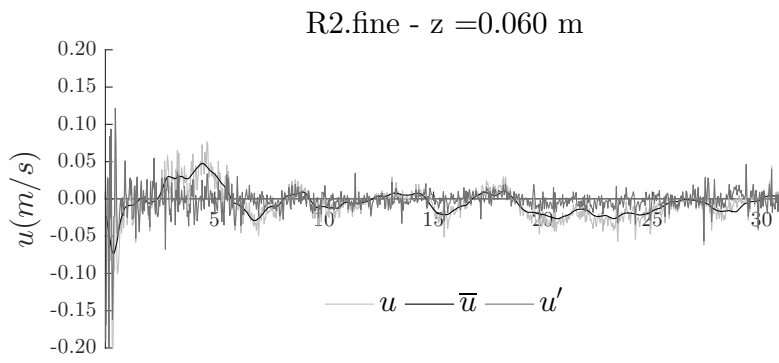
Time(s)

R2.fine - z =0.068 m

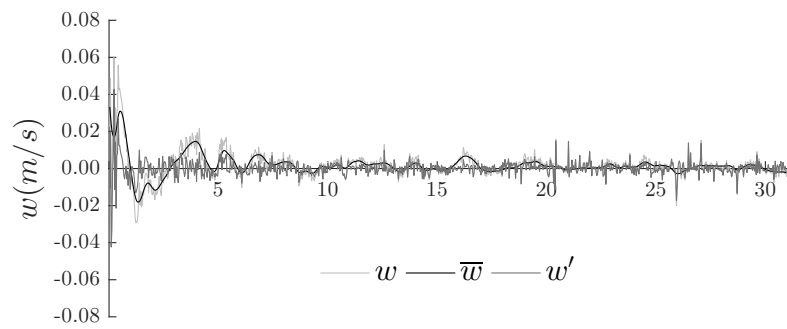
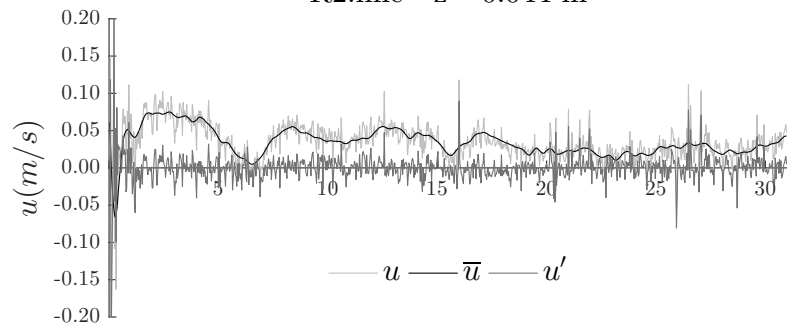


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

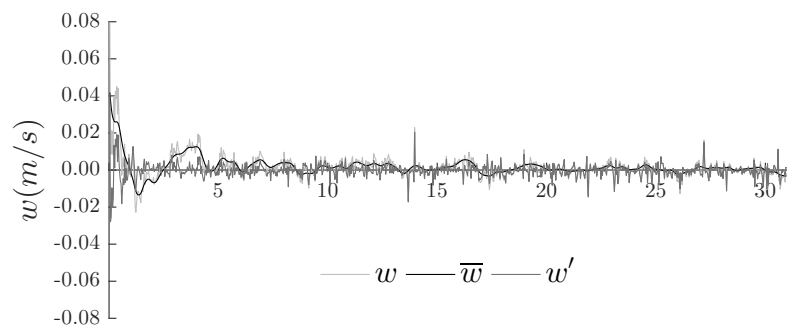
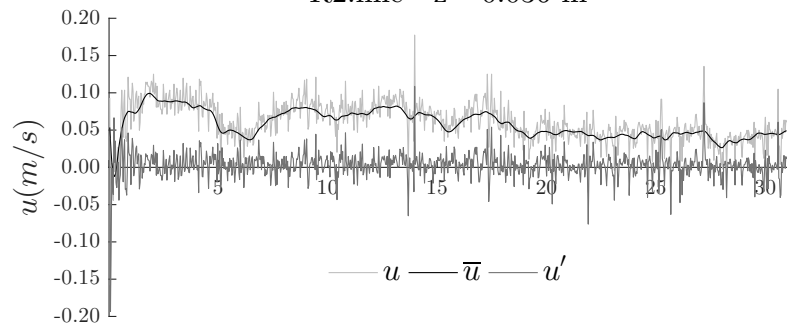


R2.fine - z =0.044 m



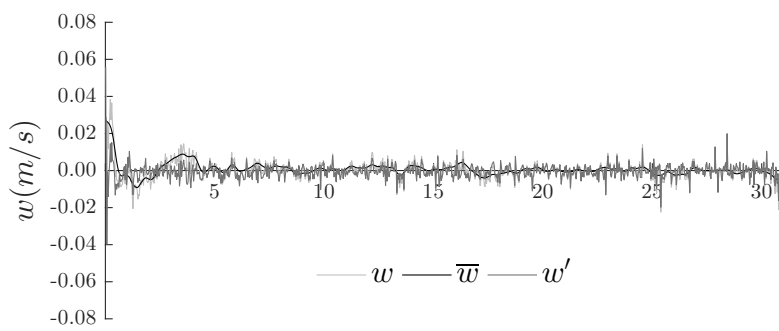
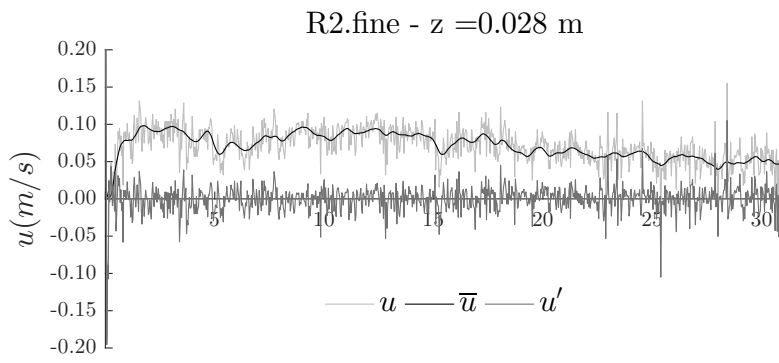
Time(s)

R2.fine - z =0.036 m

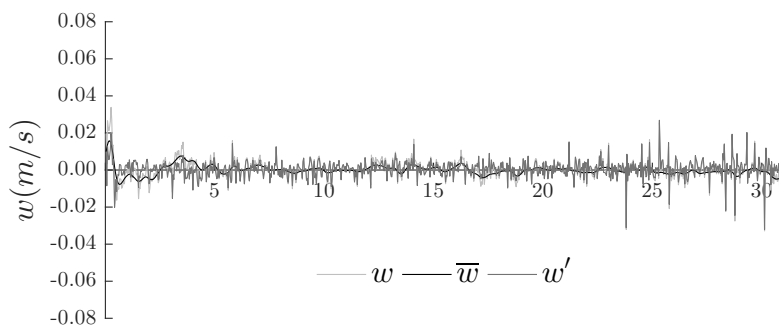
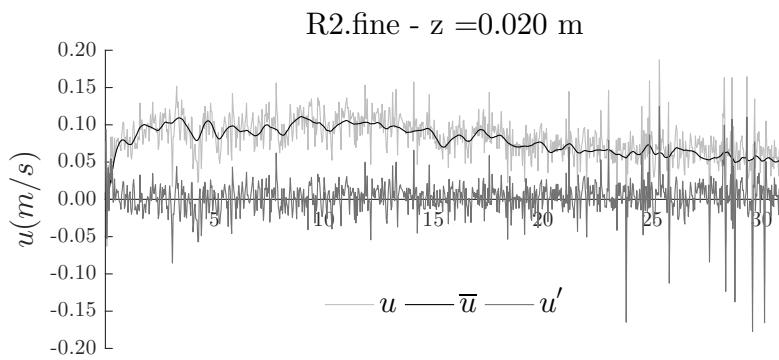


Time(s)

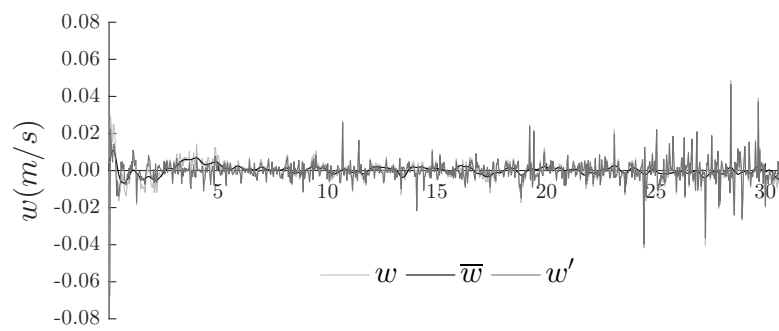
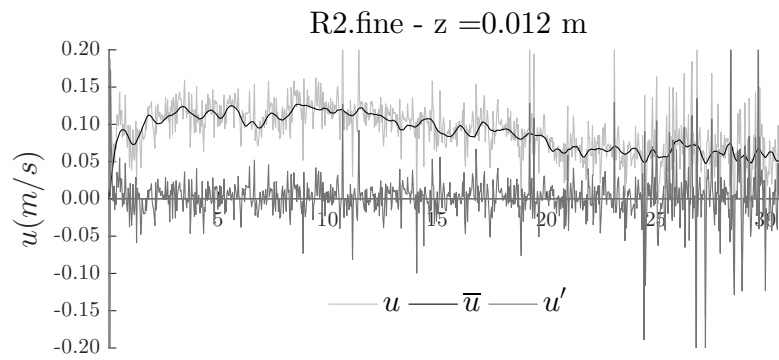
Appendix D. Appendix - Instantaneous velocity measurements



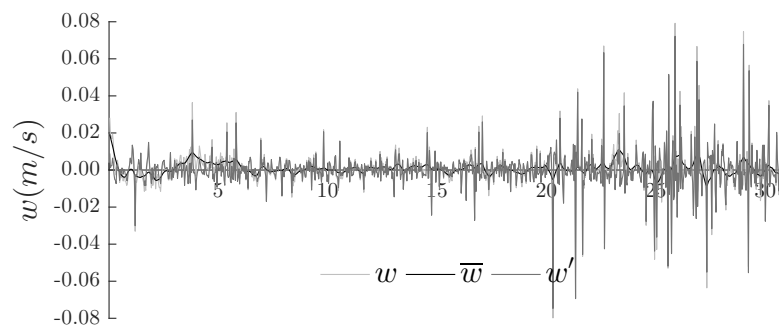
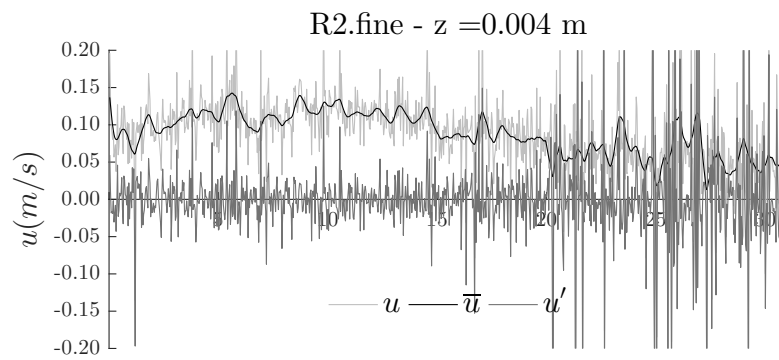
Time(s)



Time(s)

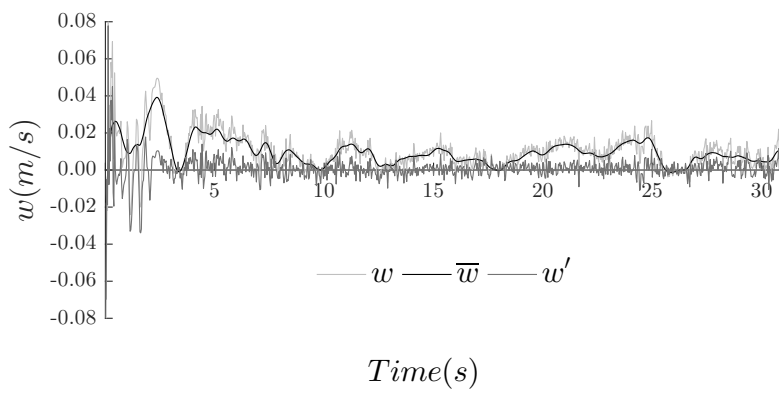
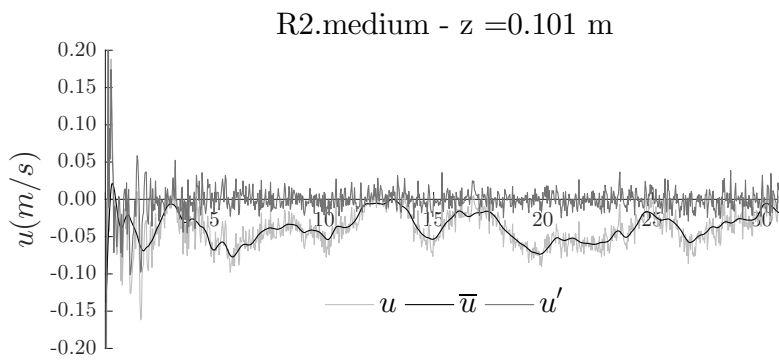
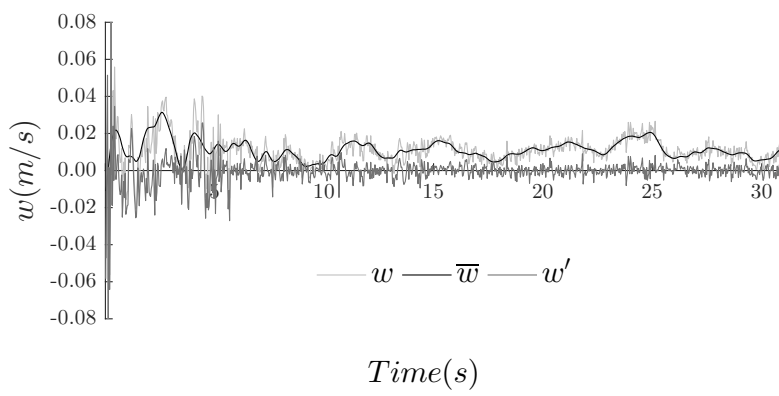
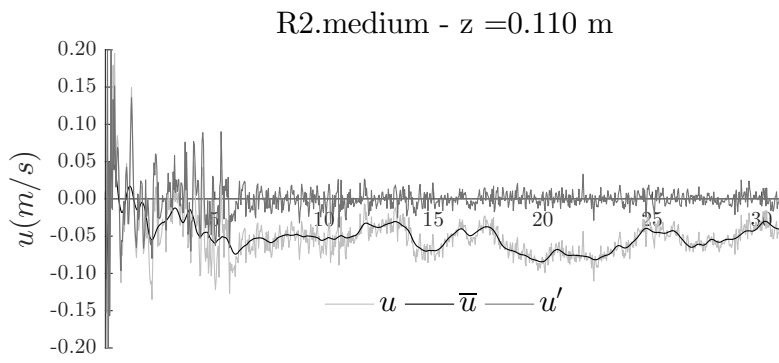


Time(s)

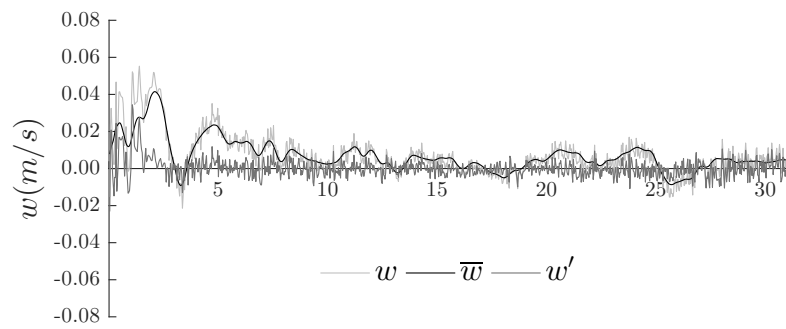
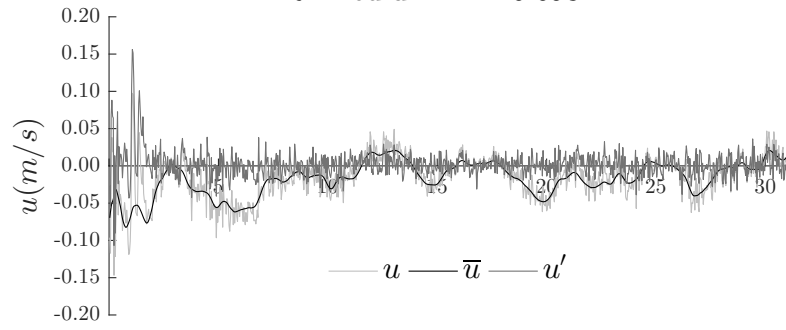


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

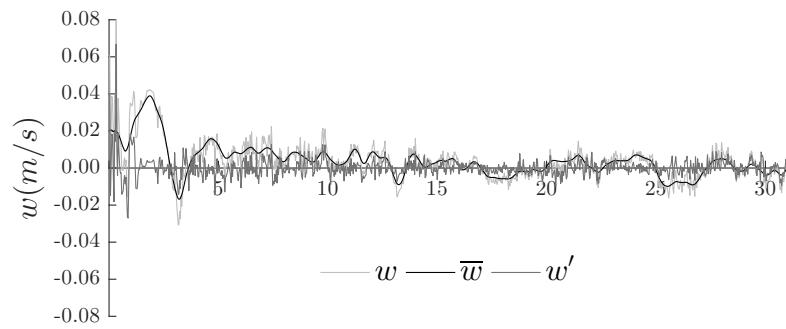
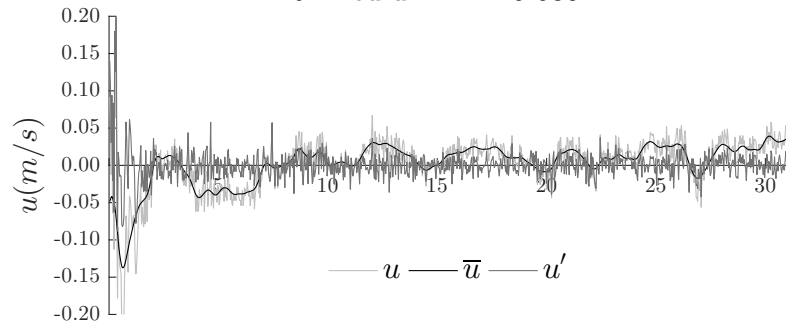


R2.medium - z =0.093 m



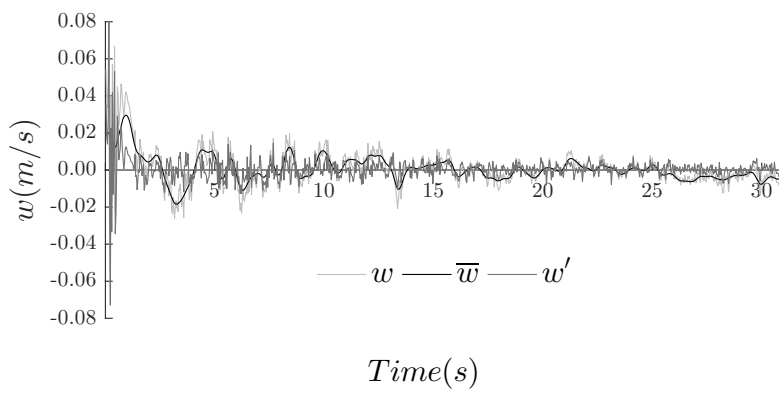
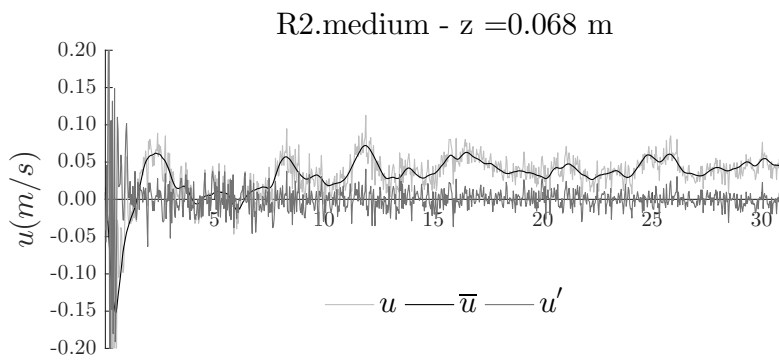
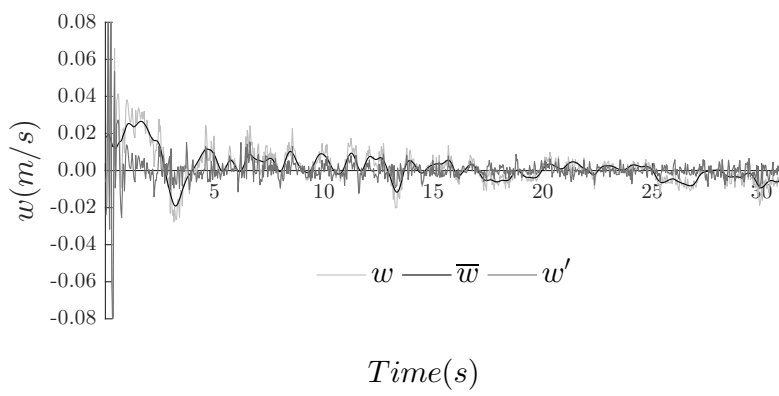
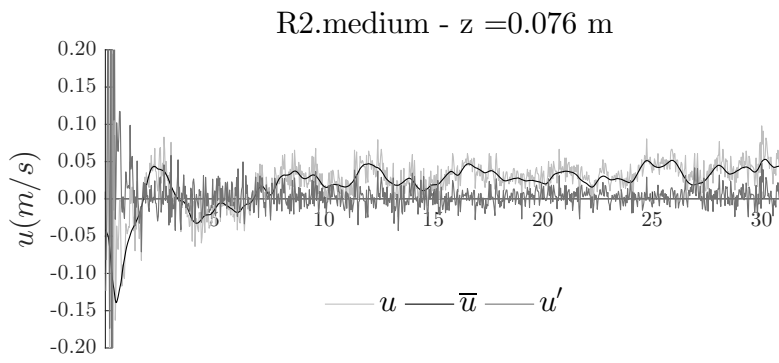
Time(s)

R2.medium - z =0.085 m

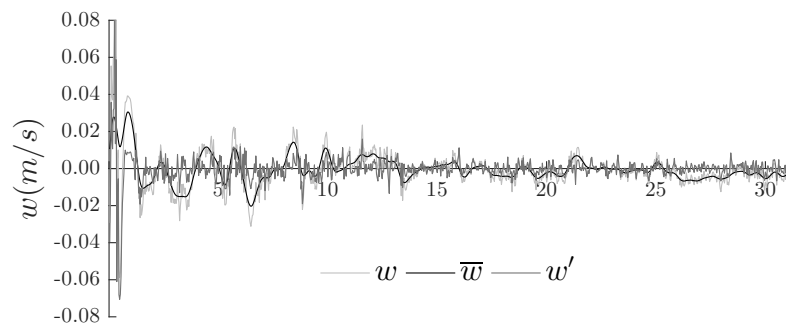
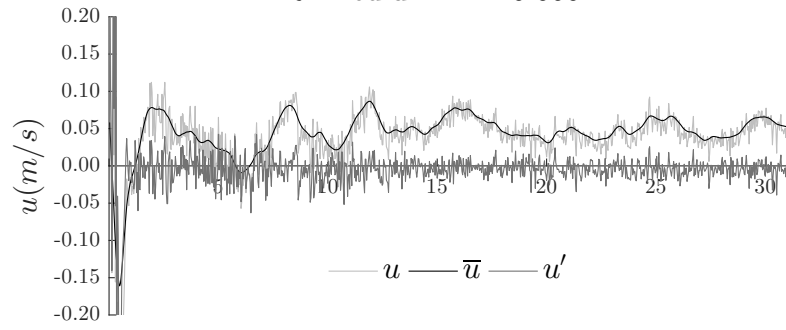


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

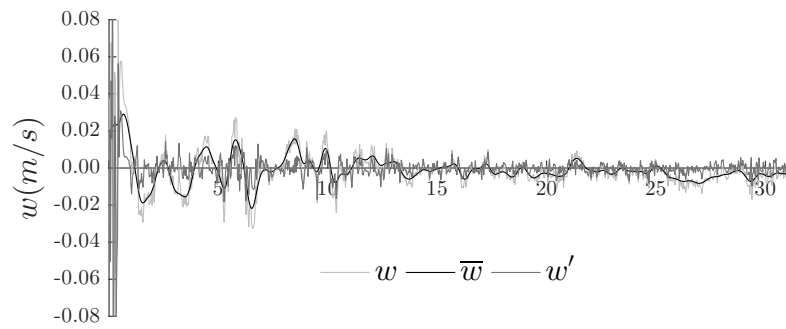
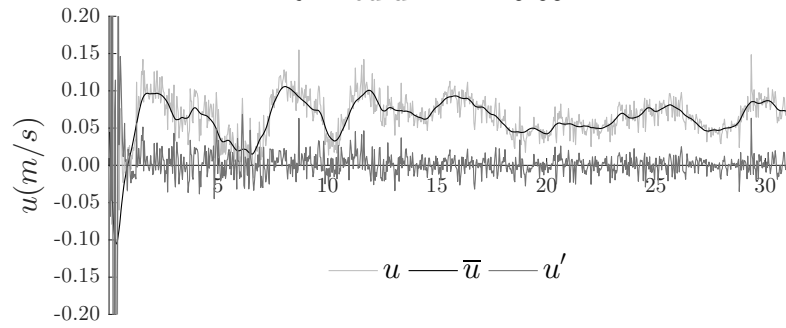


R2.medium - z =0.060 m



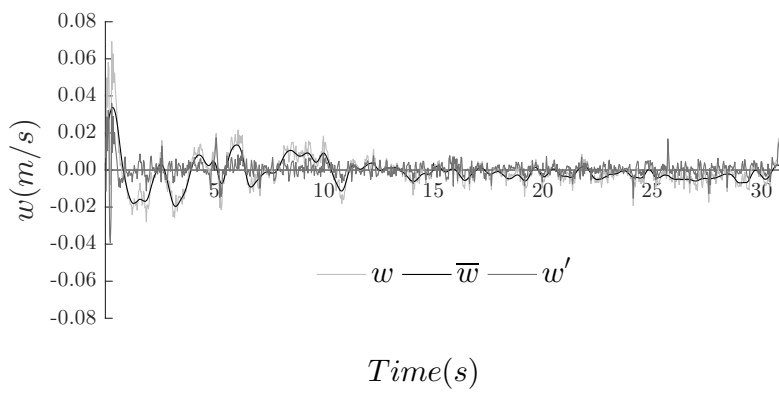
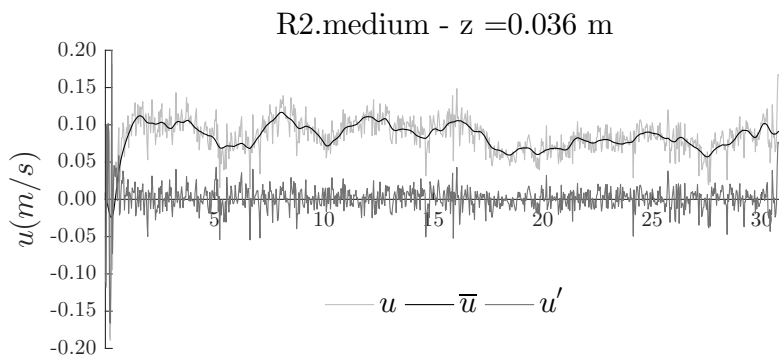
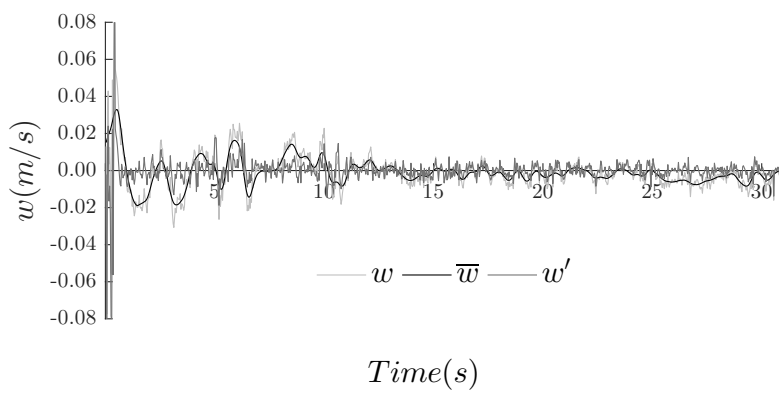
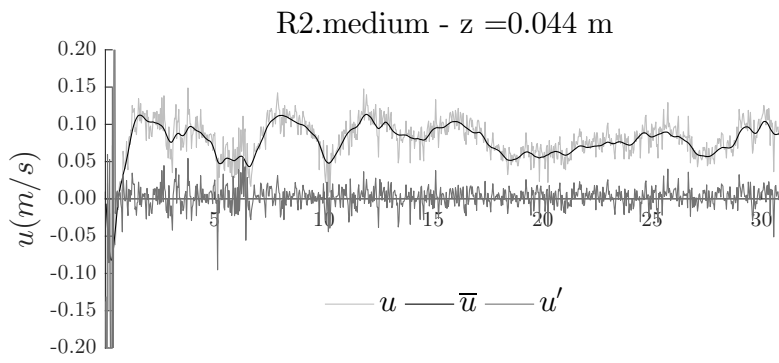
Time(s)

R2.medium - z =0.052 m

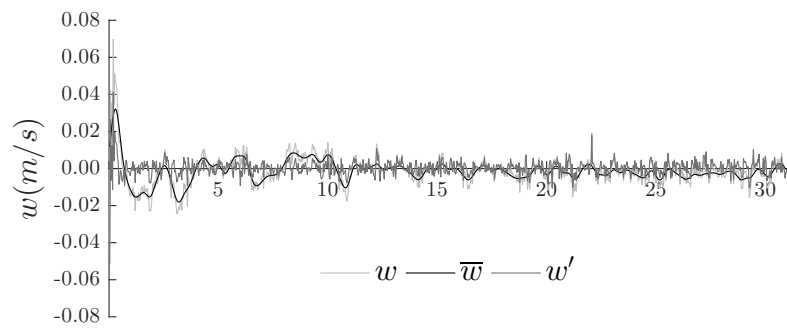
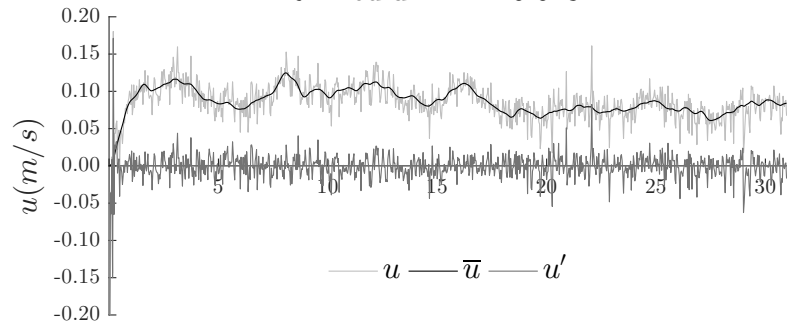


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

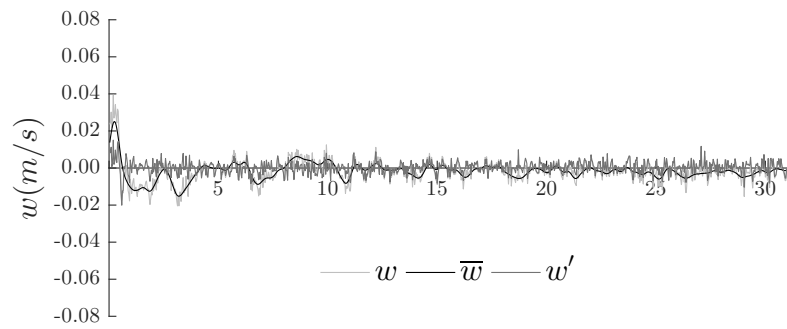
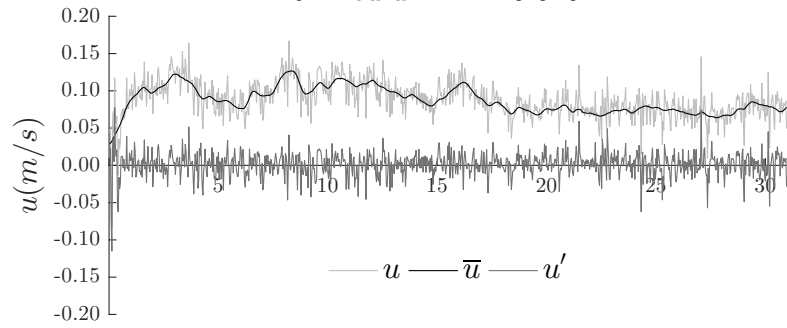


R2.medium - z =0.028 m



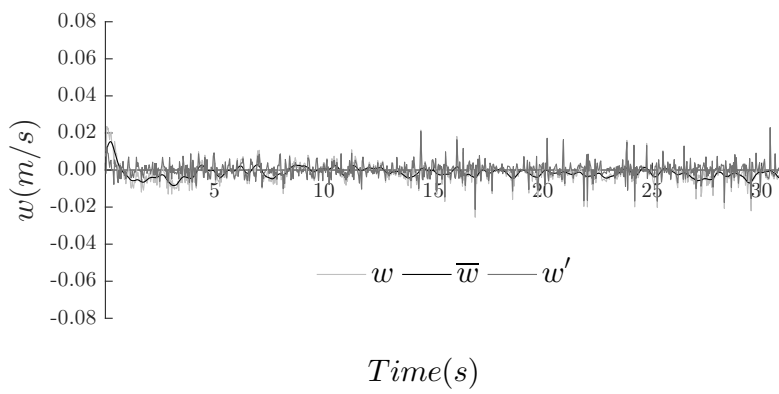
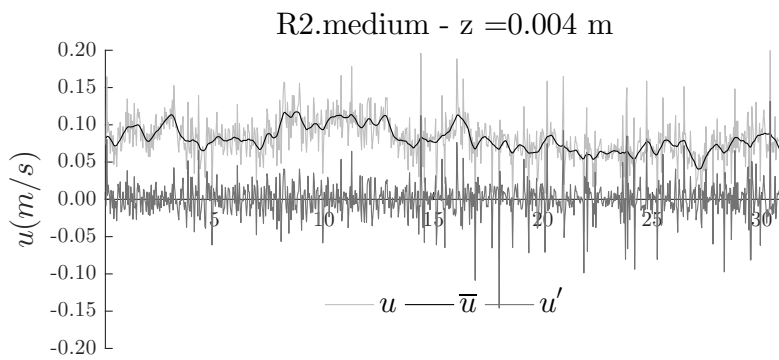
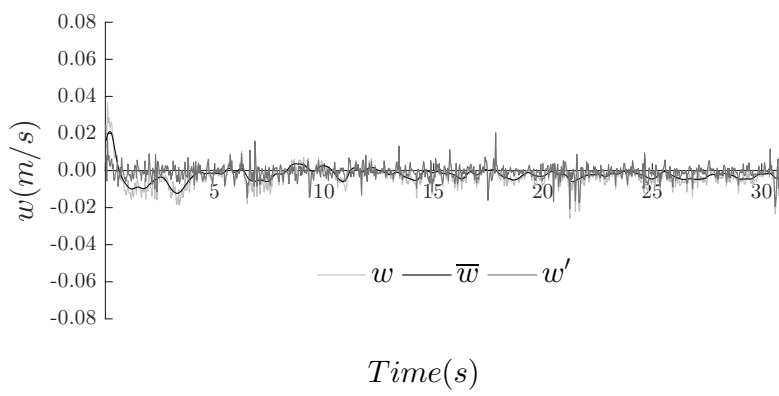
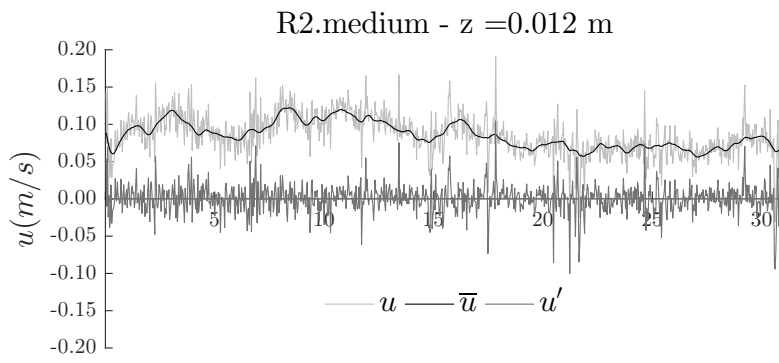
Time(s)

R2.medium - z =0.020 m

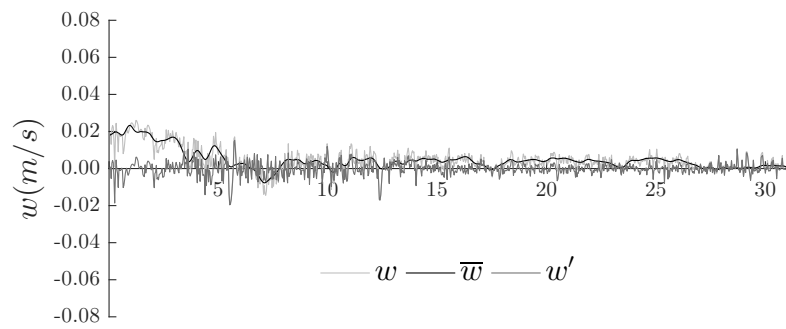
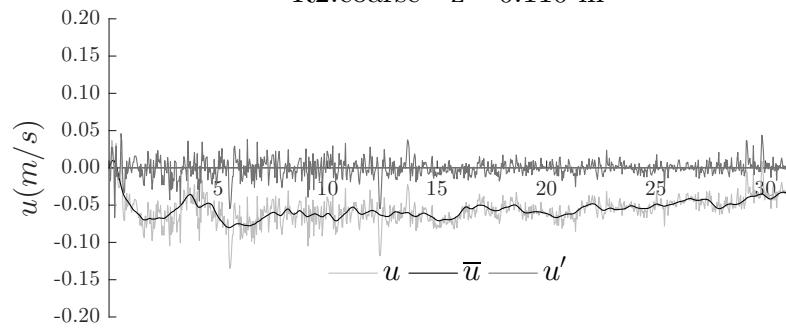


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

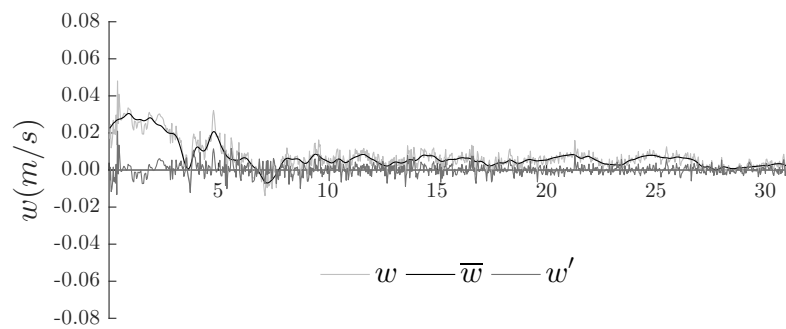
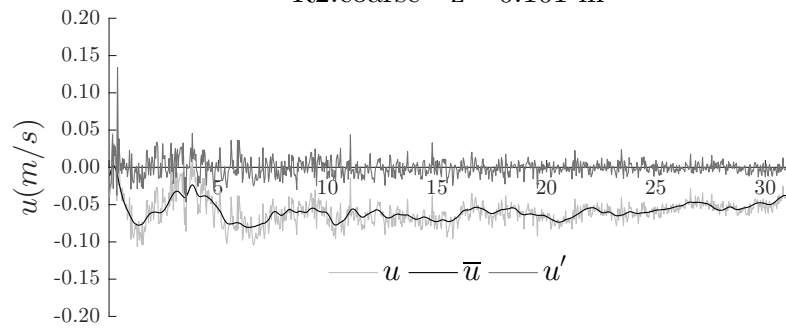


R2.coarse - z =0.110 m



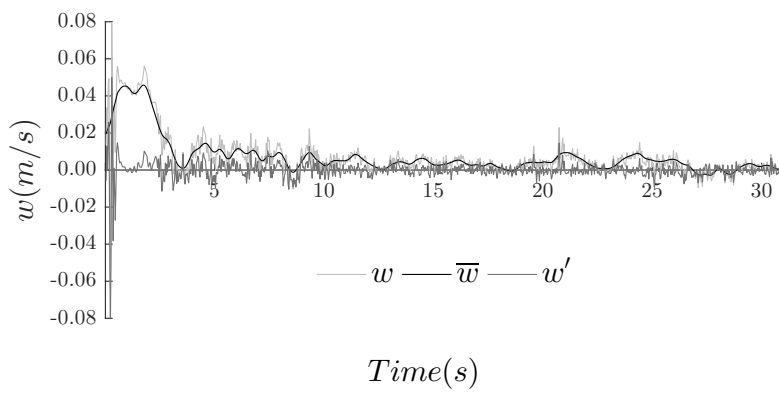
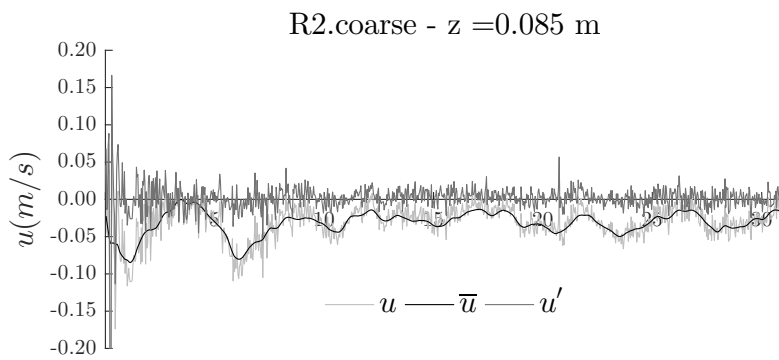
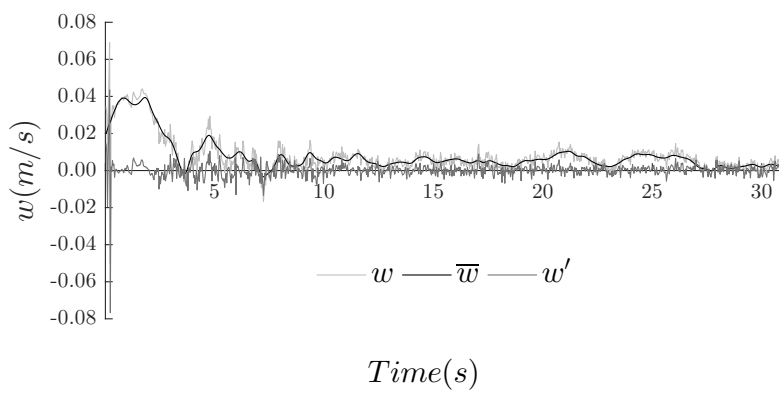
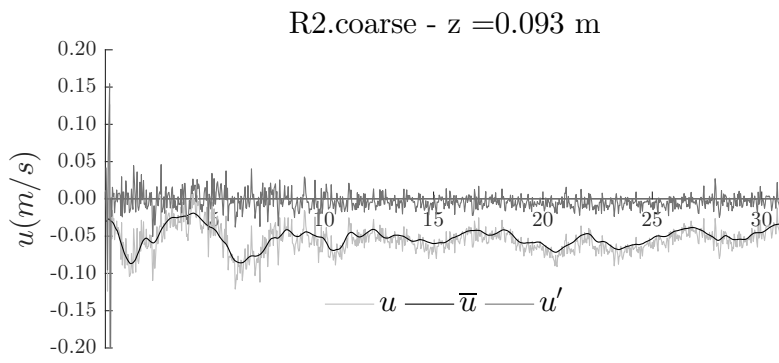
Time(s)

R2.coarse - z =0.101 m

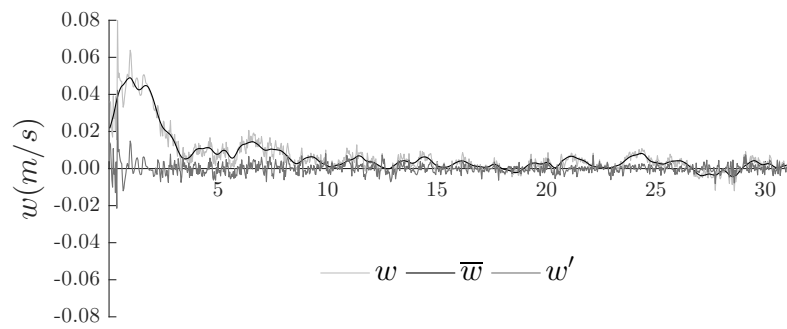
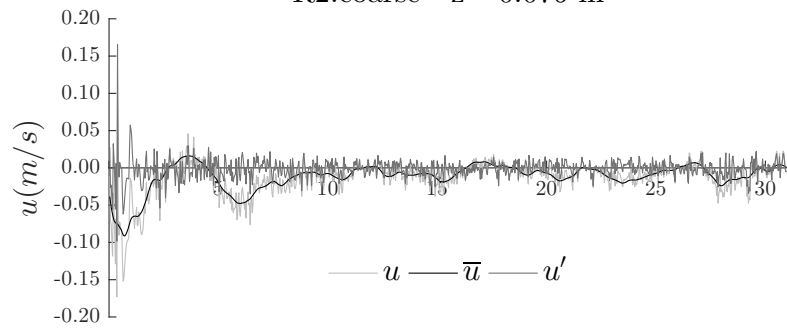


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

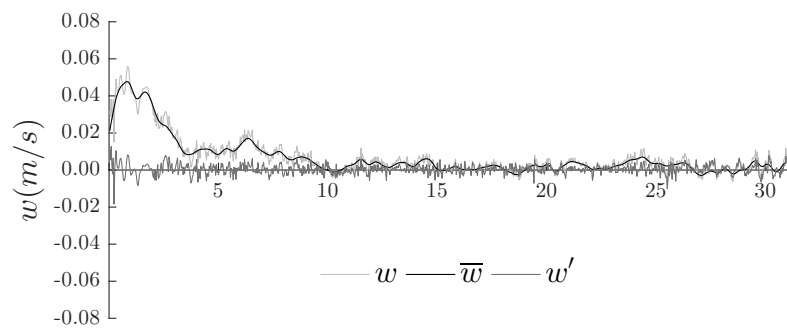
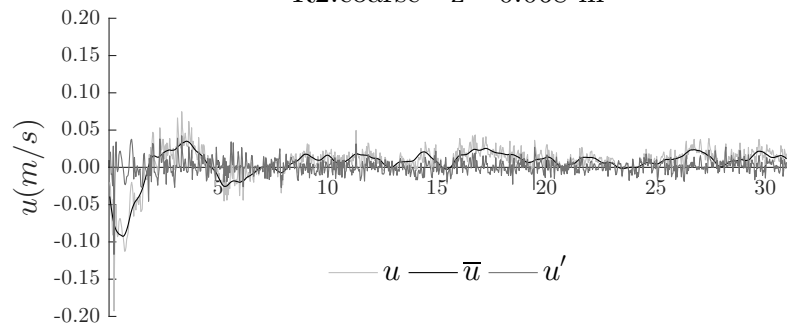


R2.coarse - z =0.076 m



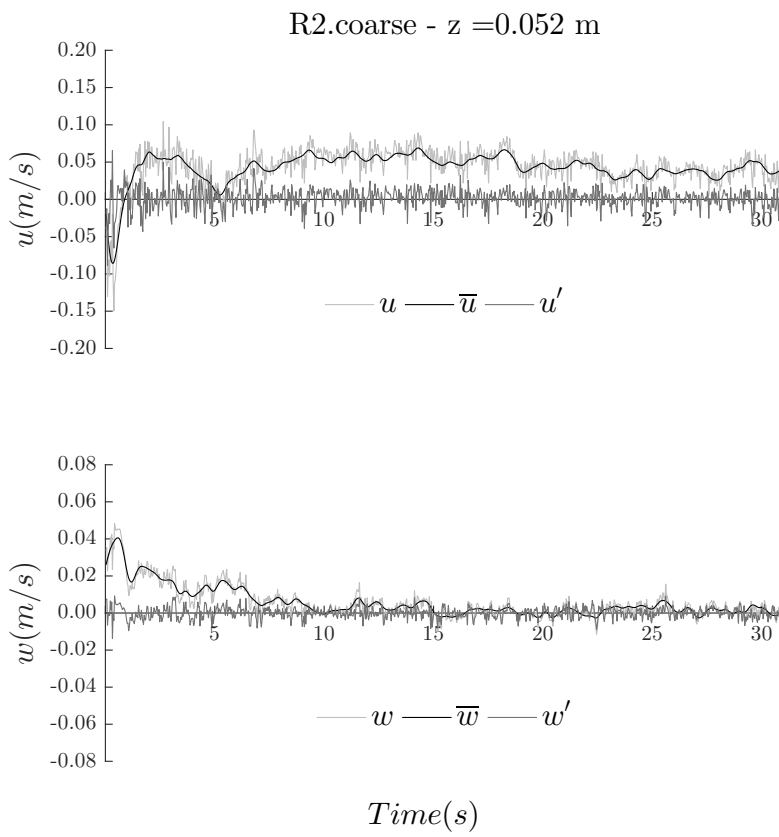
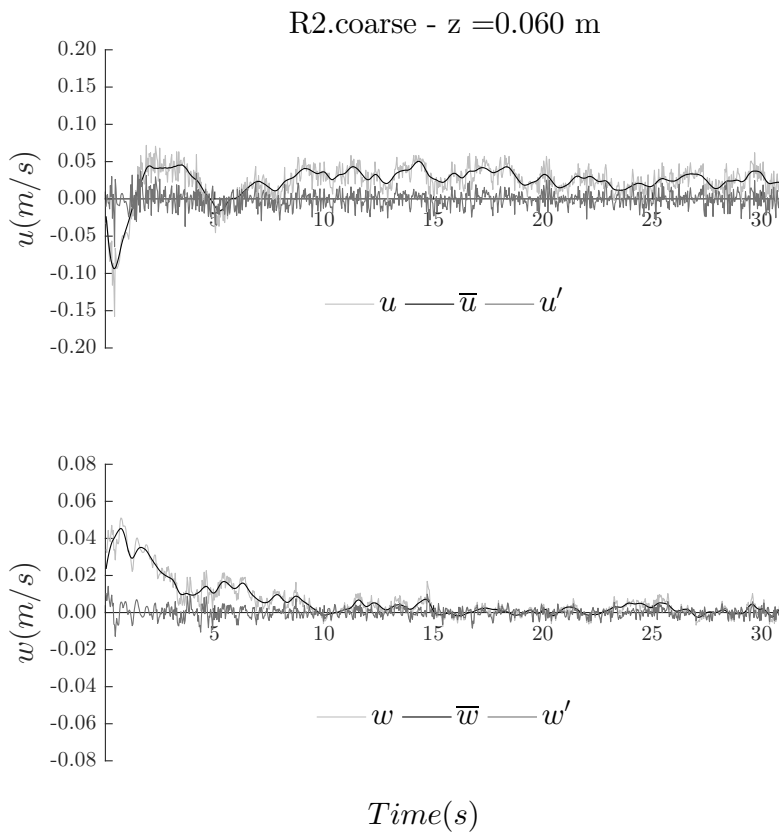
Time(s)

R2.coarse - z =0.068 m

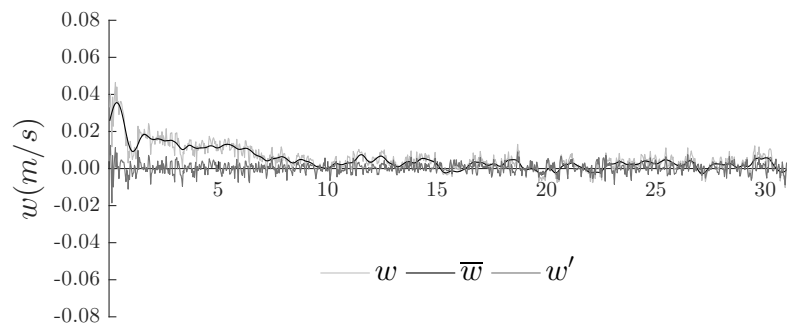
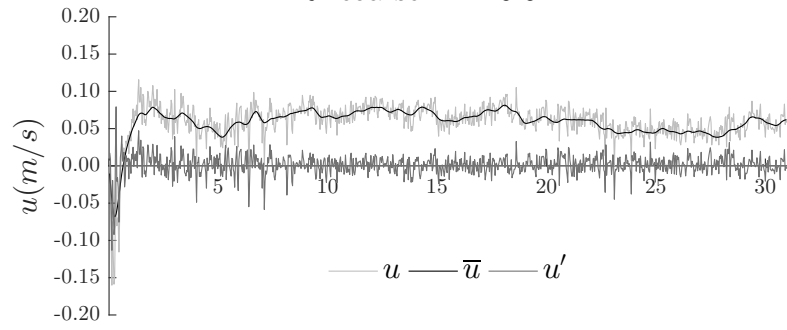


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

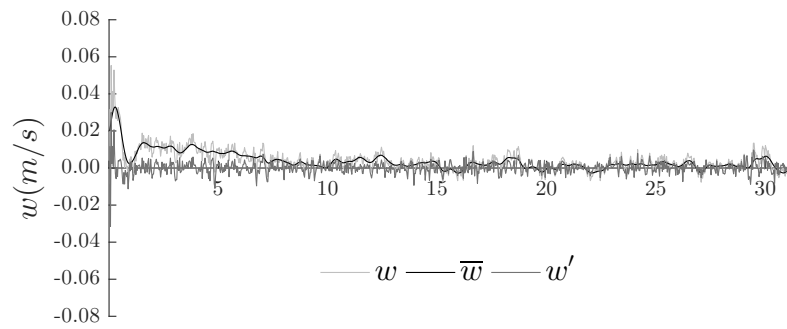
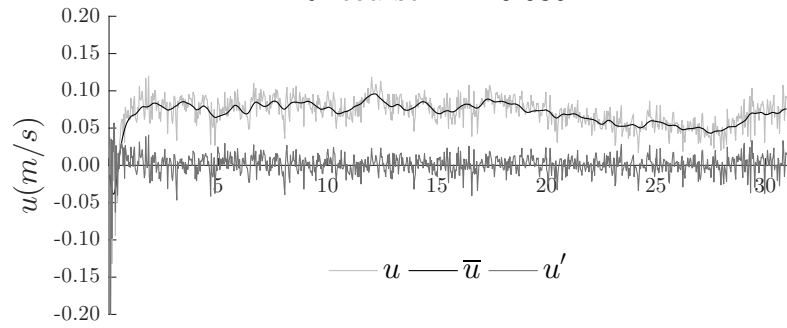


R2.coarse - z =0.044 m



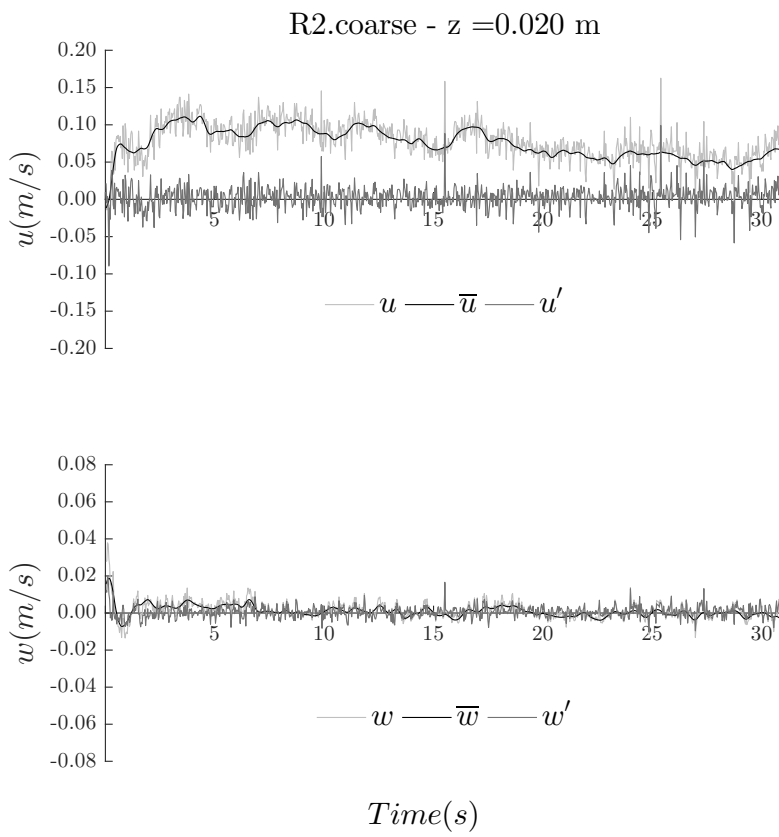
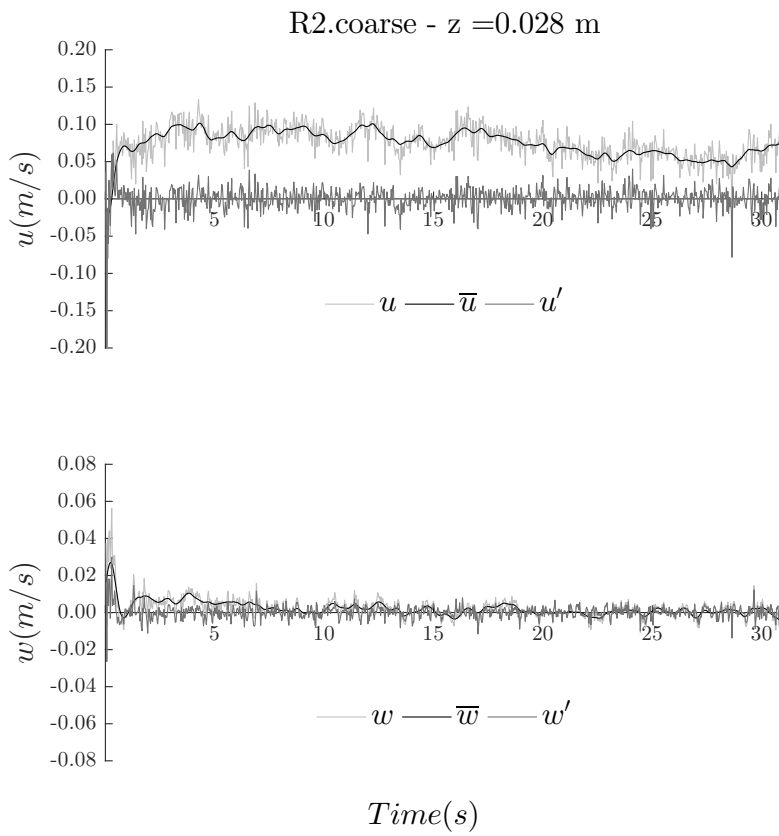
Time(s)

R2.coarse - z =0.036 m

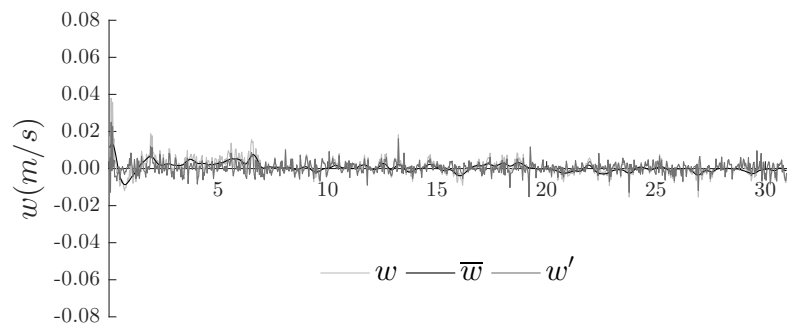
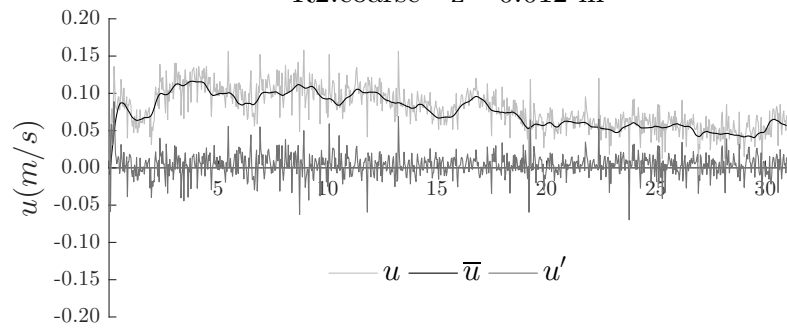


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

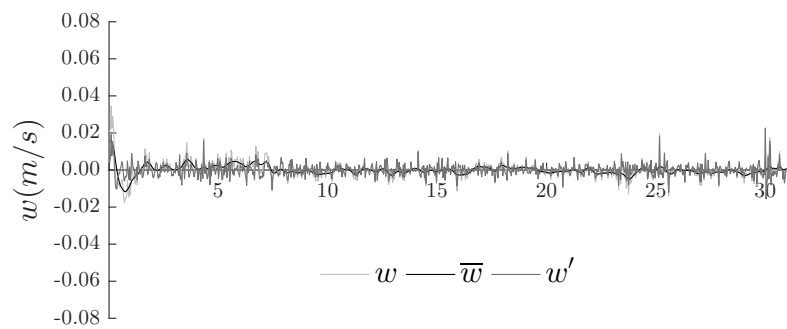
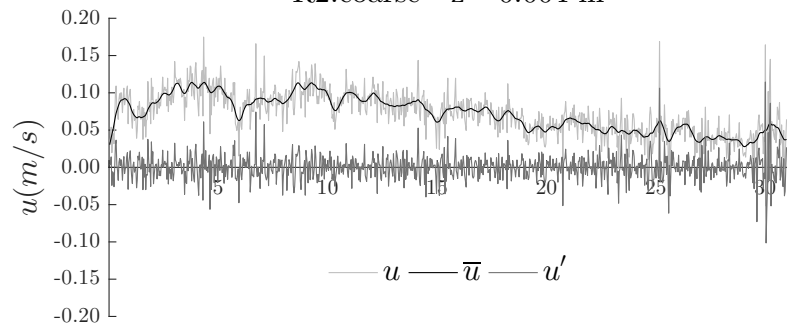


R2.coarse - z =0.012 m



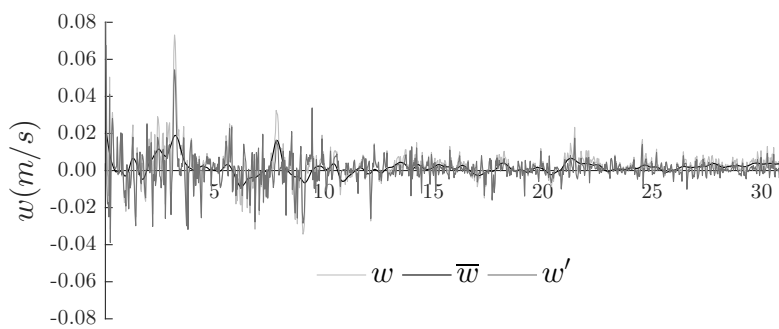
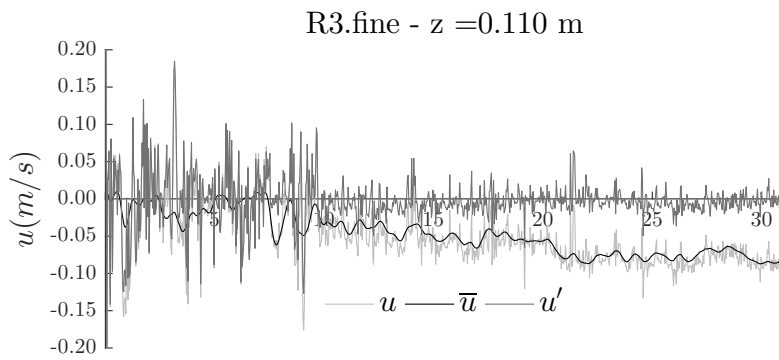
Time(s)

R2.coarse - z =0.004 m

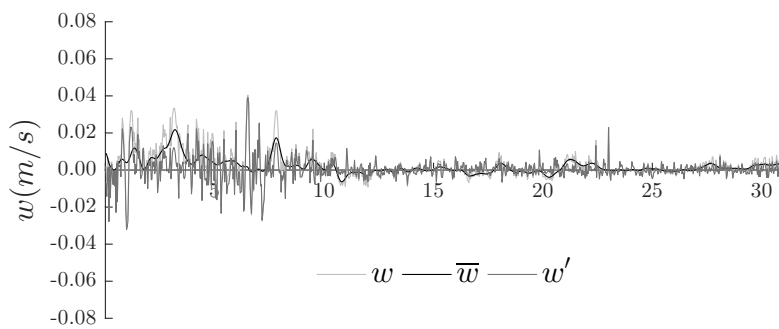
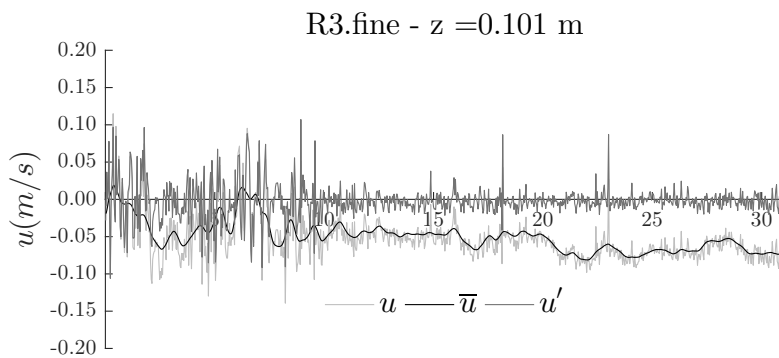


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

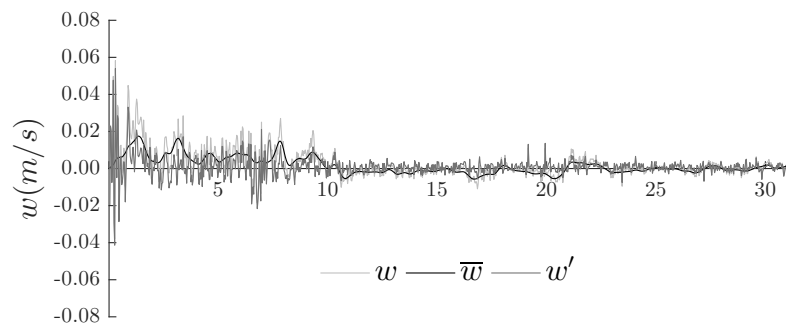
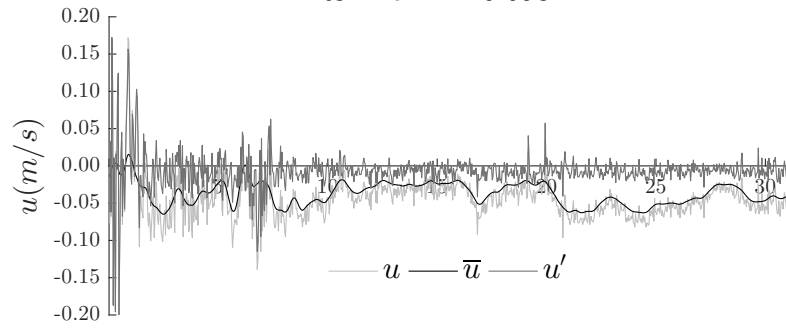


Time(s)



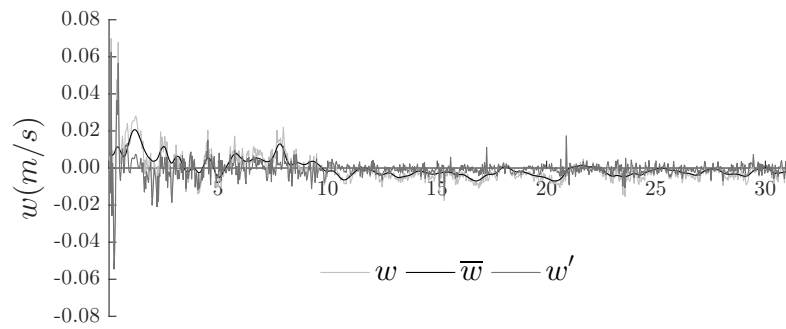
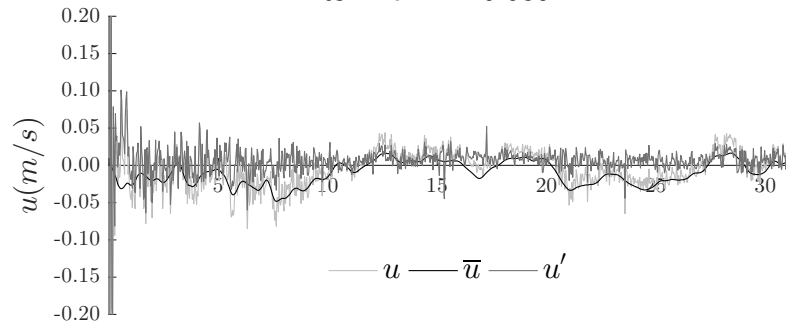
Time(s)

R3.fine - z =0.093 m



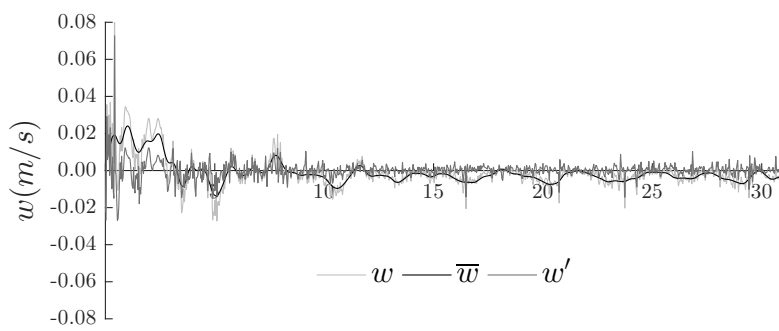
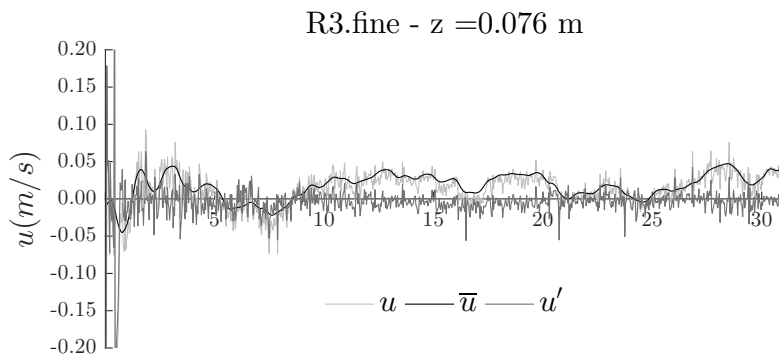
Time(s)

R3.fine - z =0.085 m

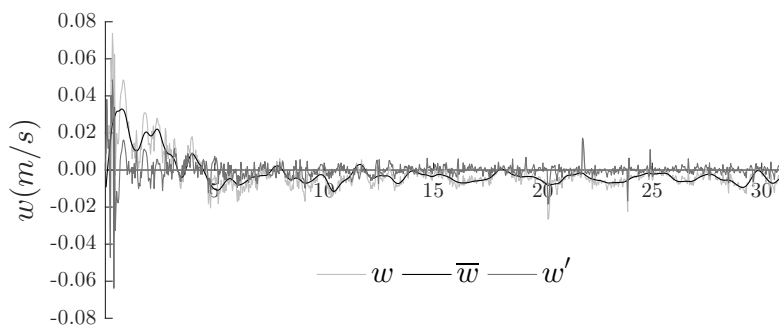
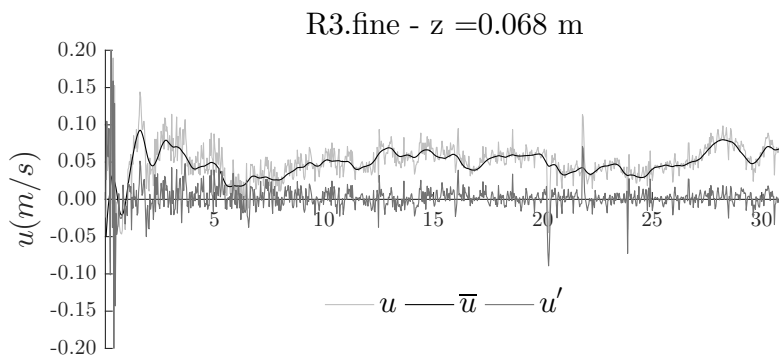


Time(s)

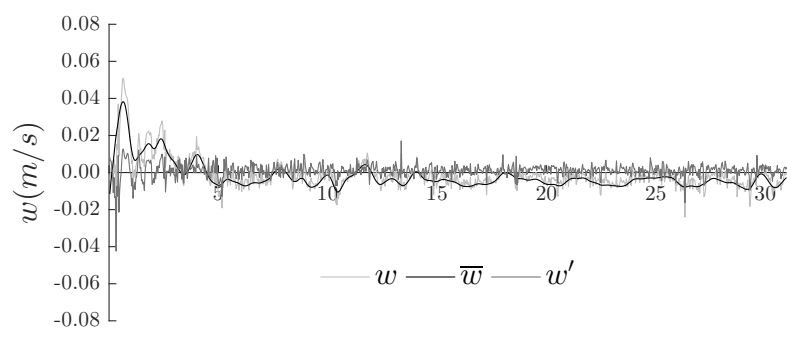
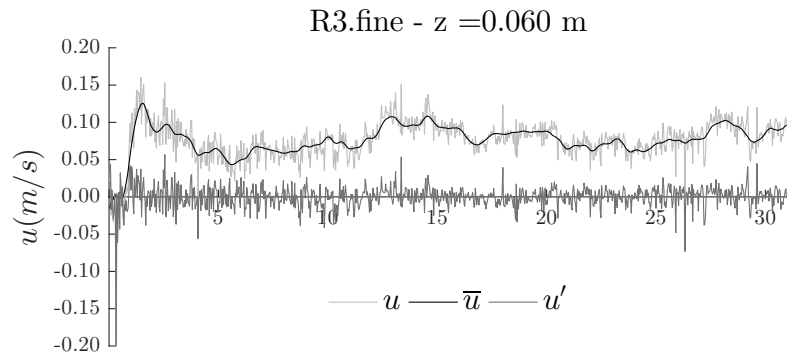
Appendix D. Appendix - Instantaneous velocity measurements



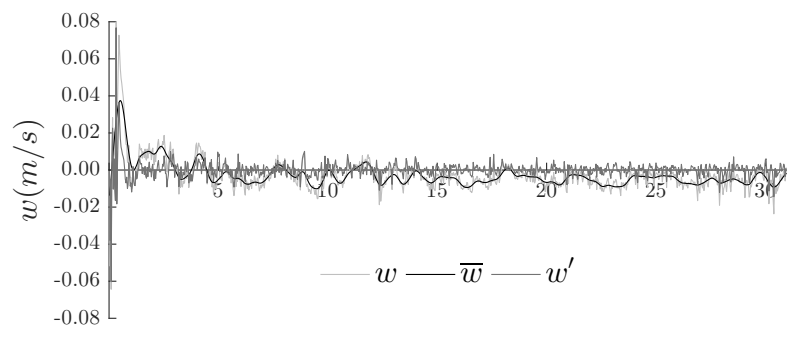
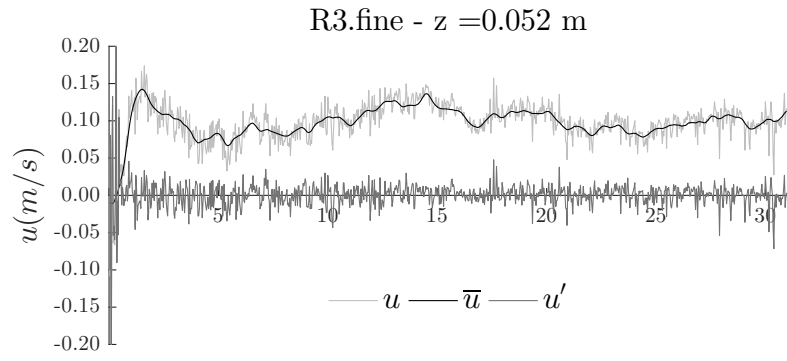
Time(s)



Time(s)

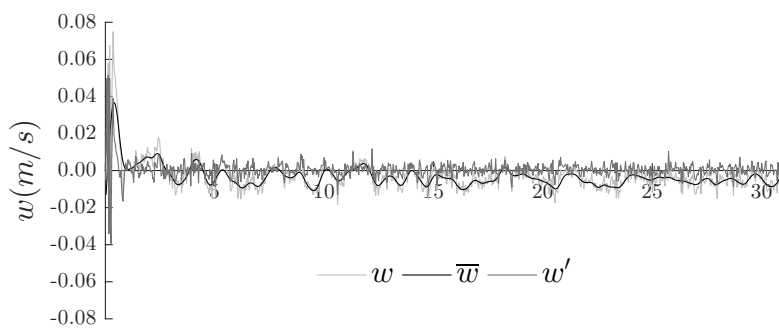
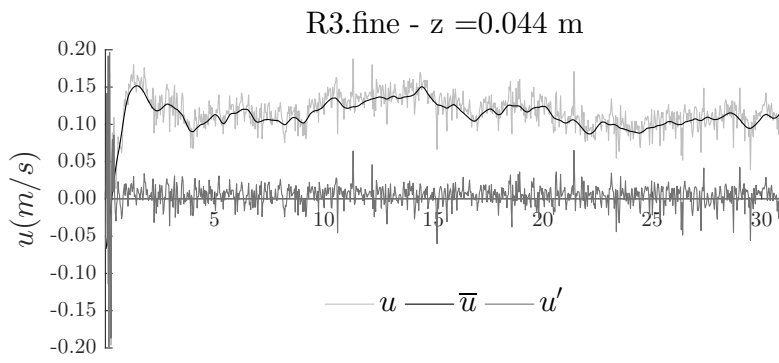


Time(s)

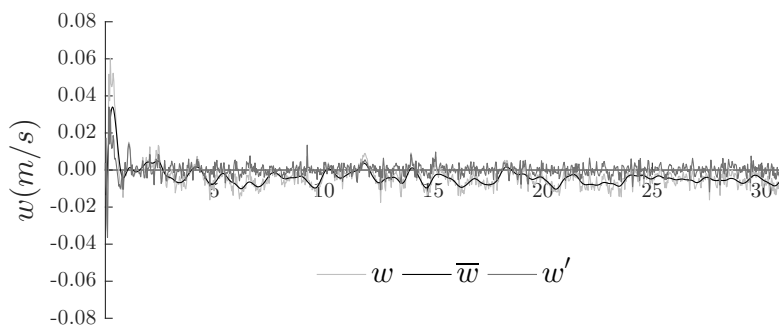
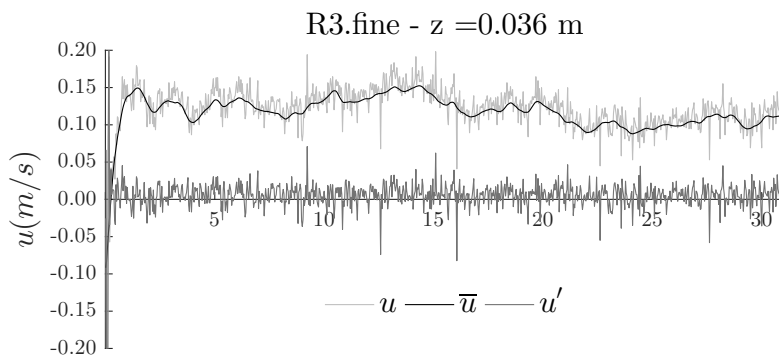


Time(s)

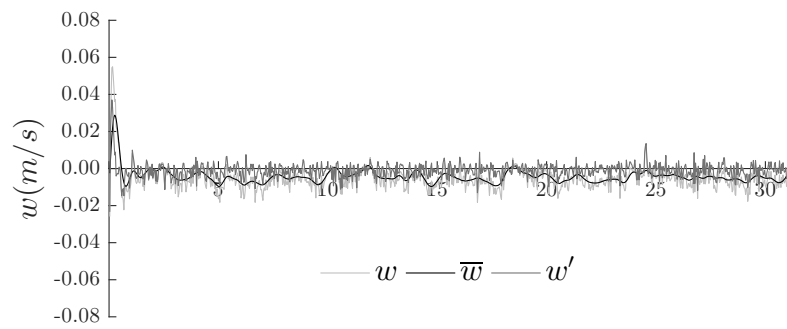
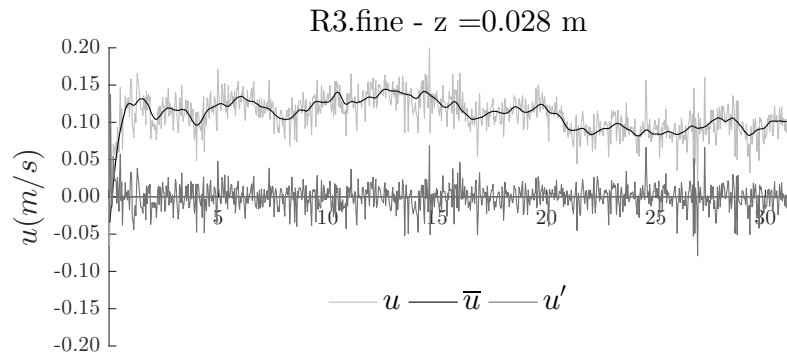
Appendix D. Appendix - Instantaneous velocity measurements



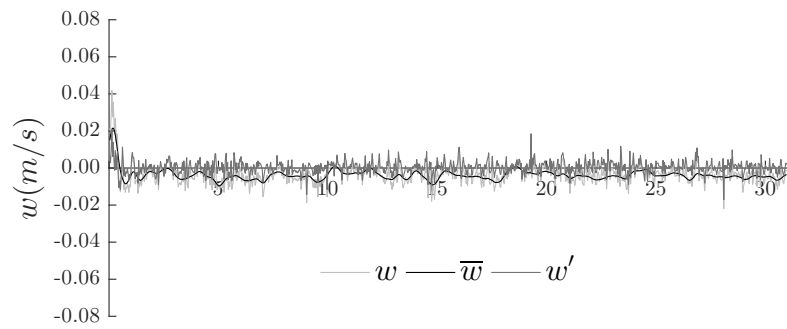
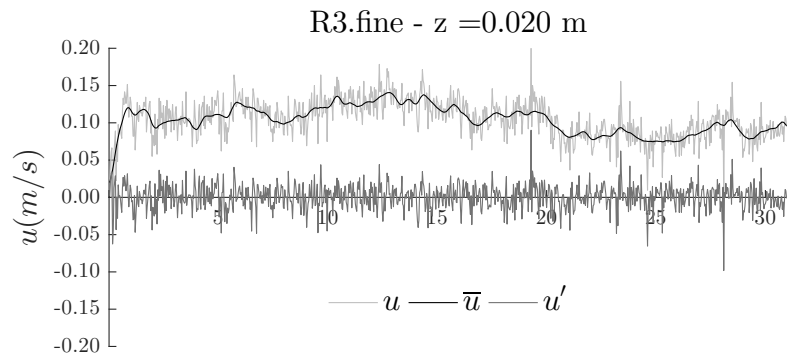
Time(s)



Time(s)

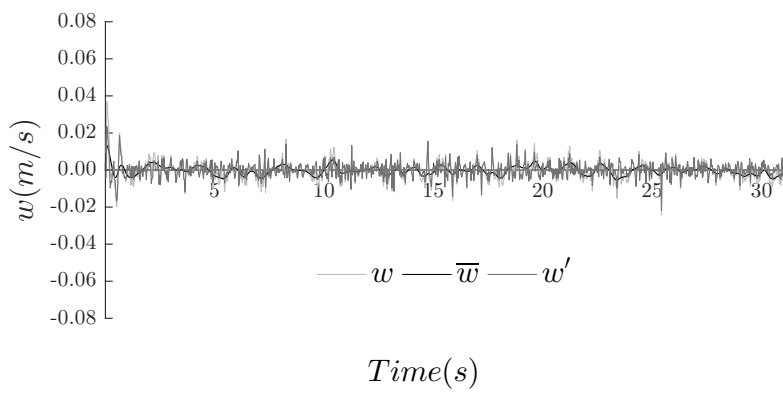
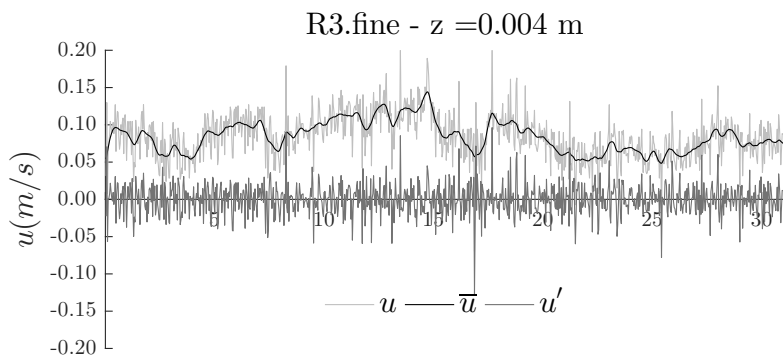
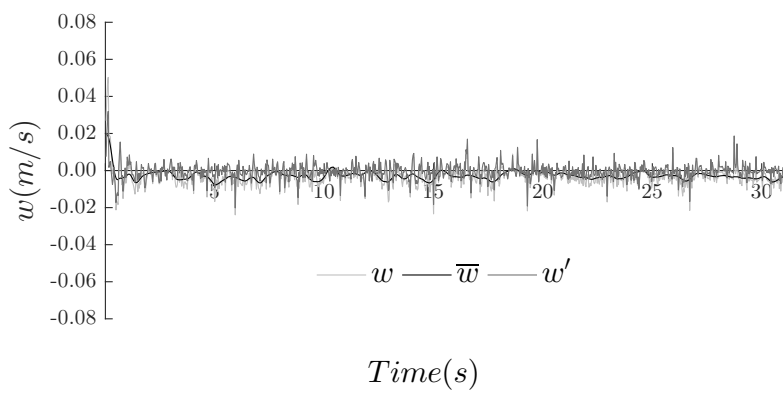
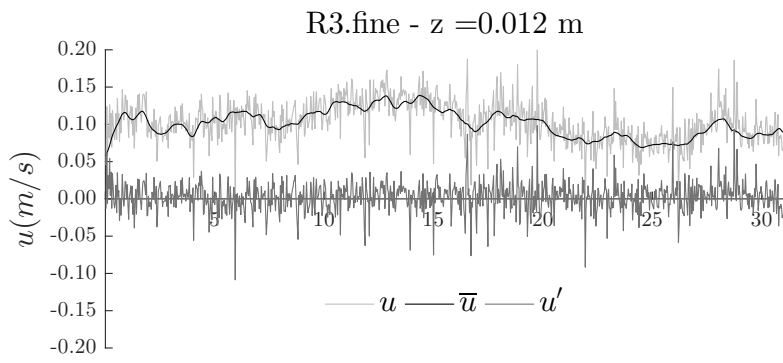


Time(s)

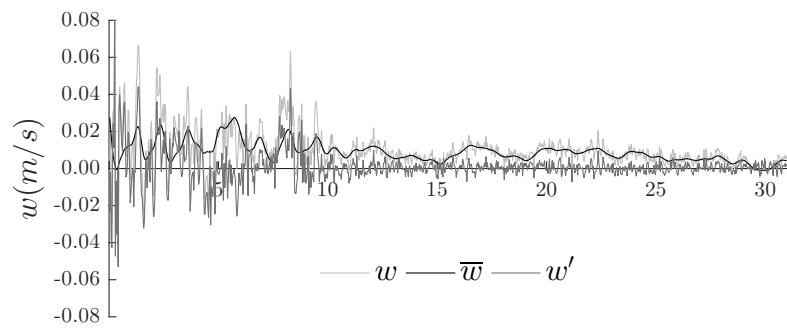
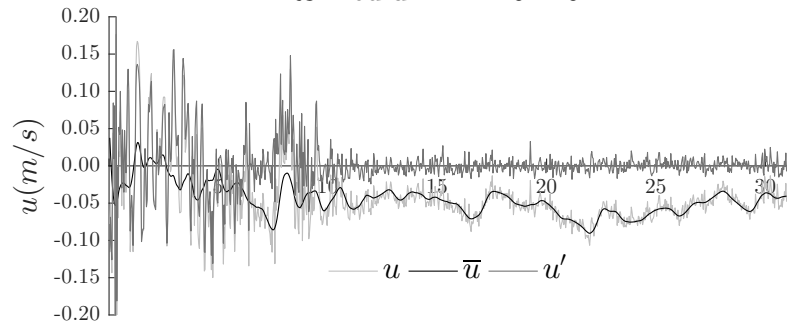


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

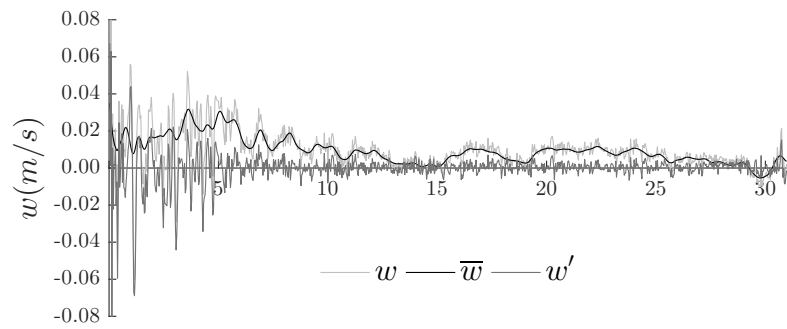
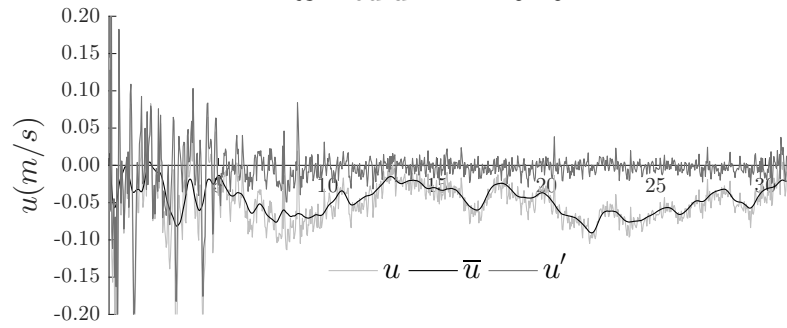


R3.medium - z =0.110 m



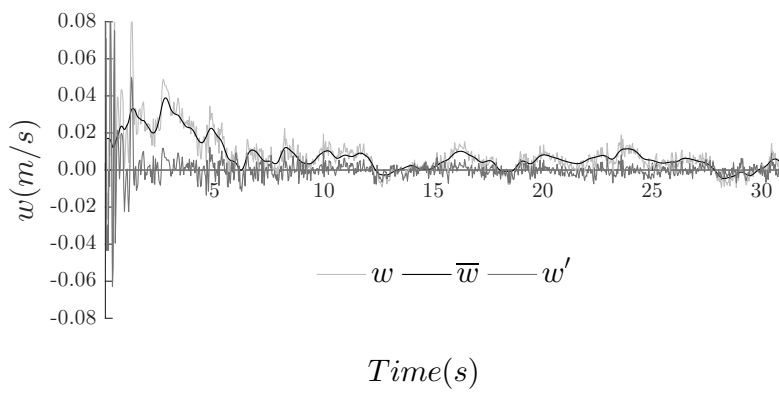
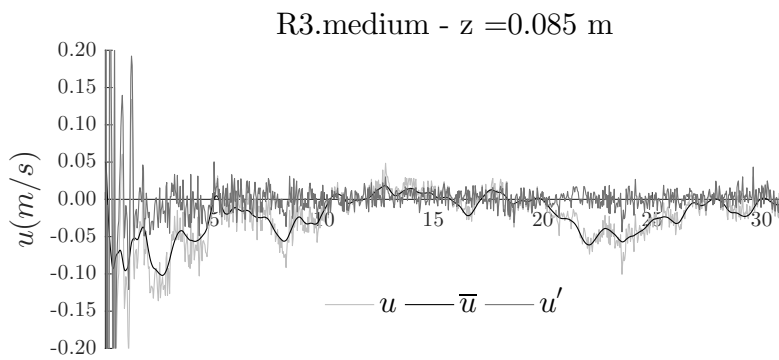
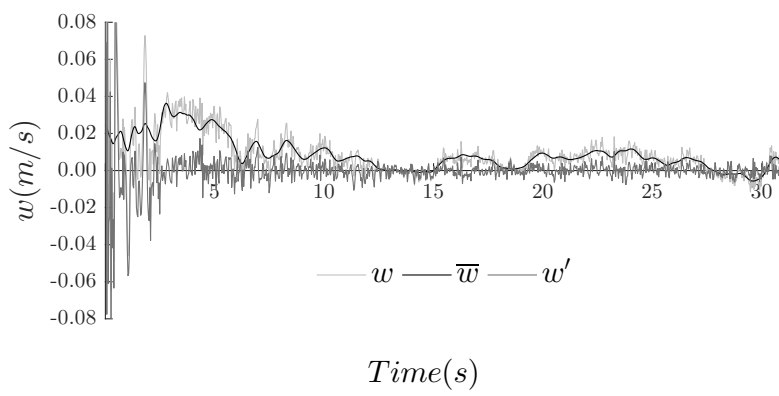
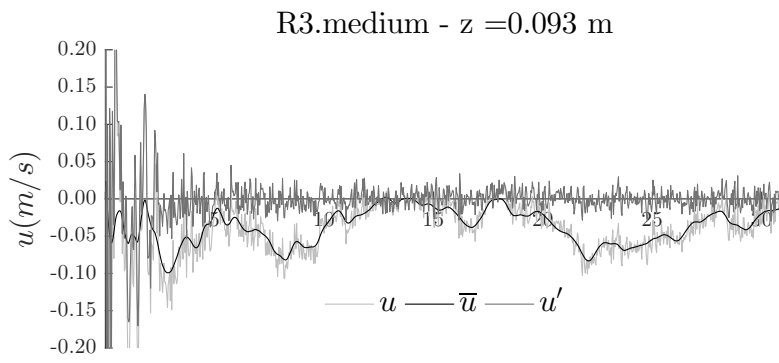
Time(s)

R3.medium - z =0.101 m

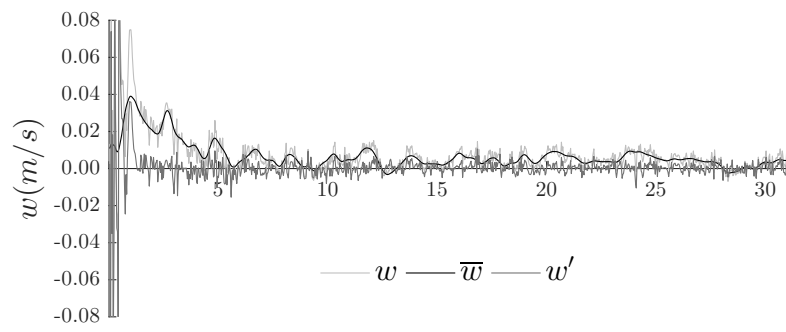
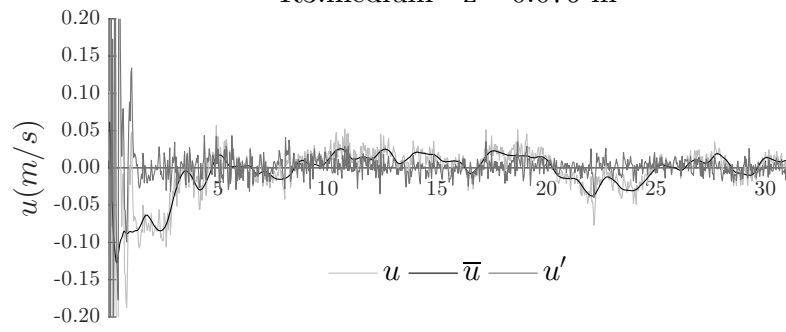


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

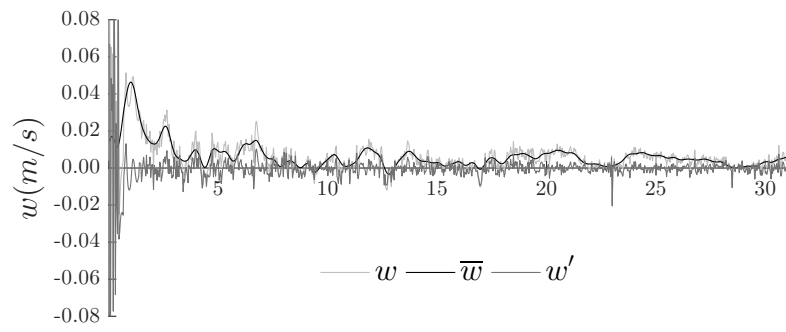
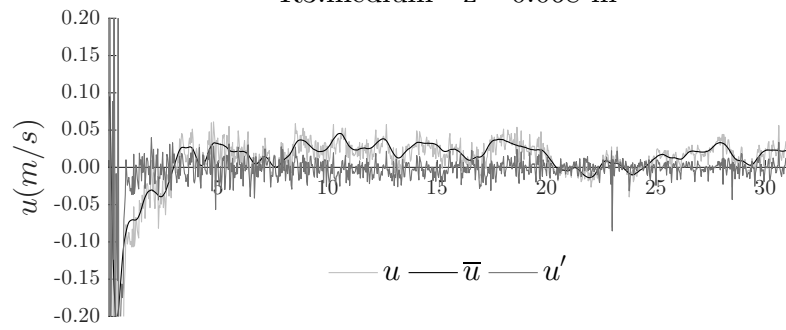


R3.medium - z =0.076 m



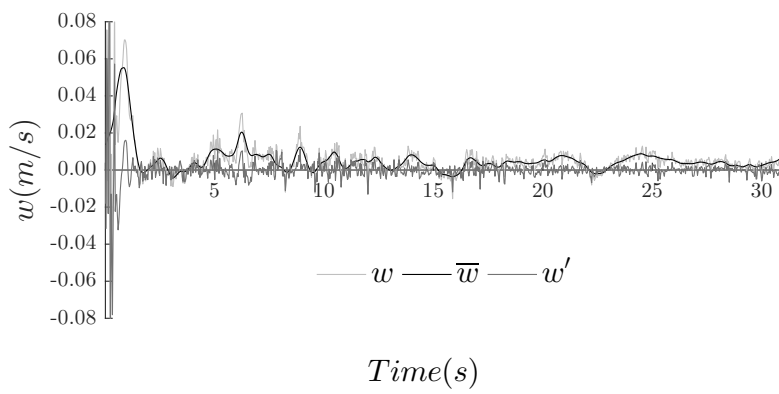
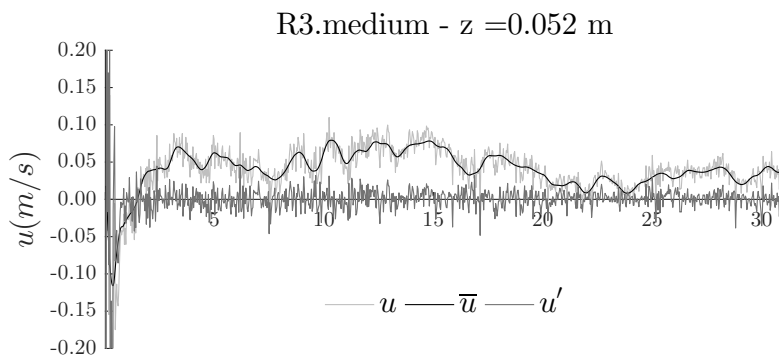
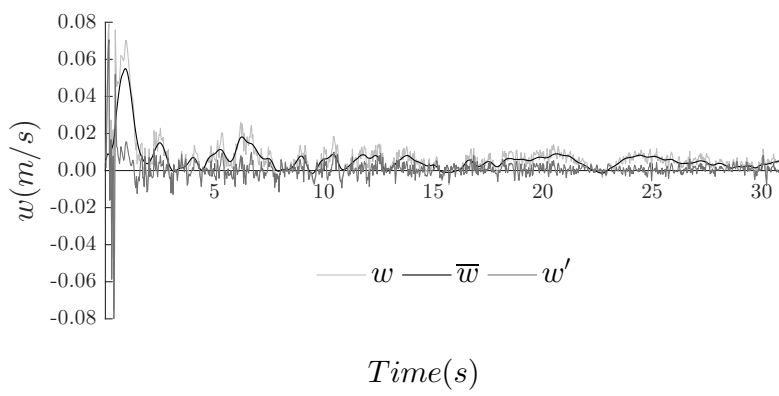
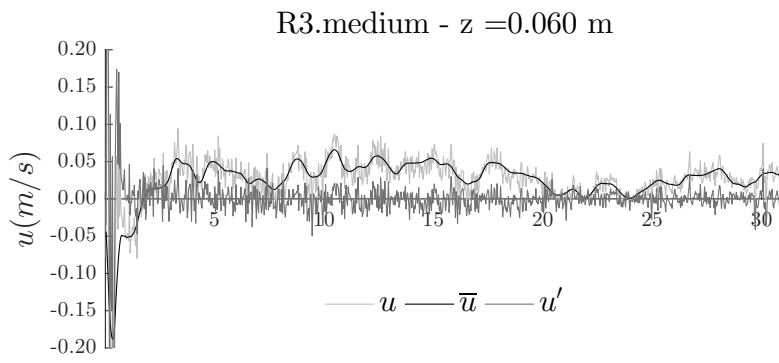
Time(s)

R3.medium - z =0.068 m

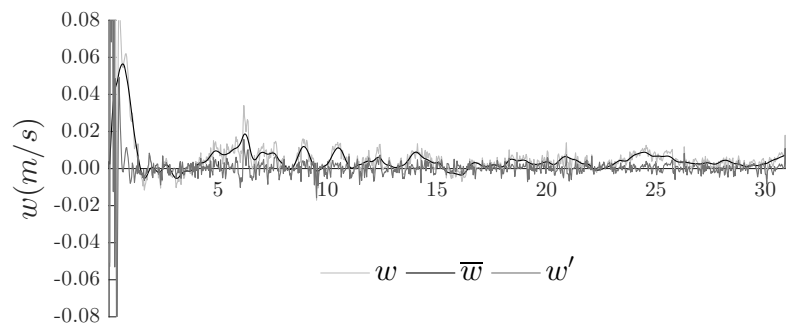
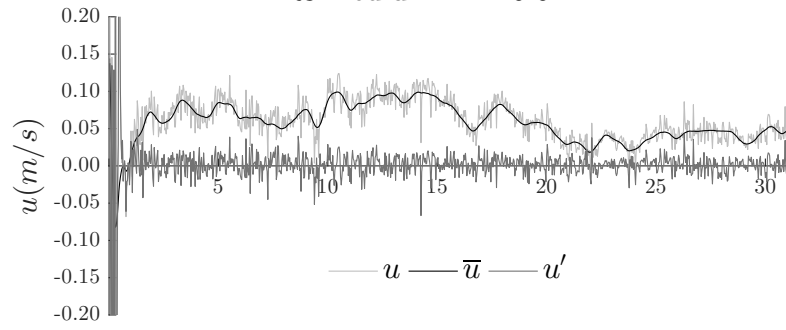


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

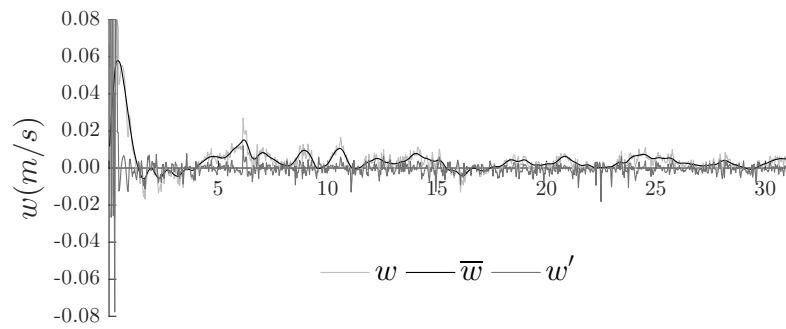
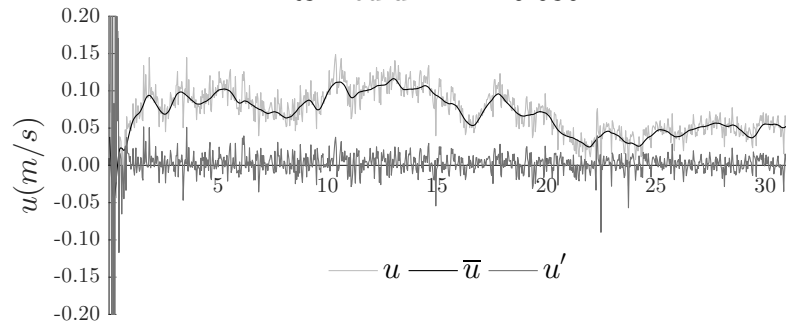


R3.medium - z =0.044 m



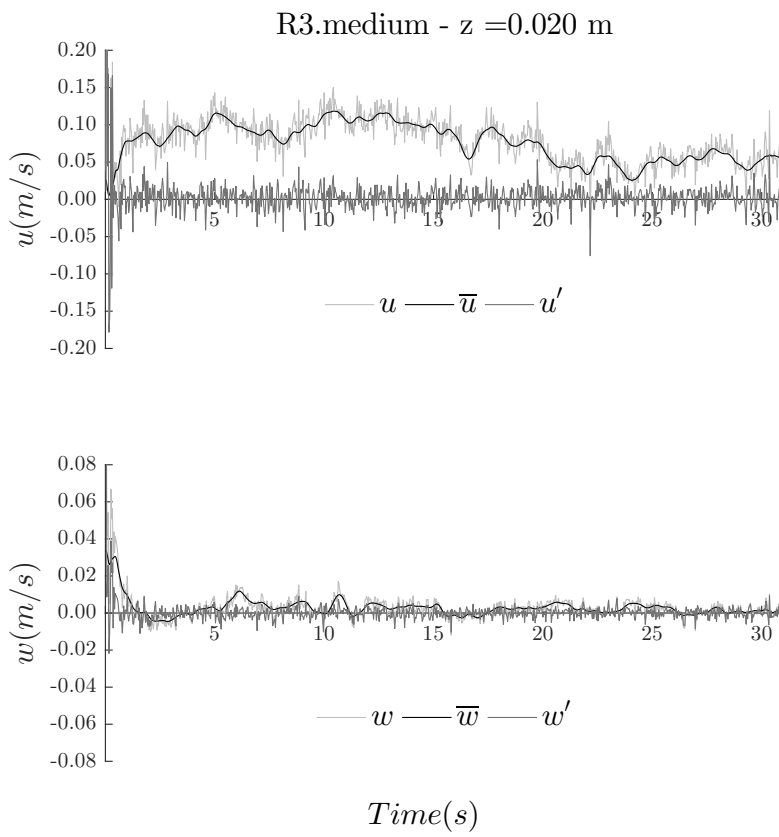
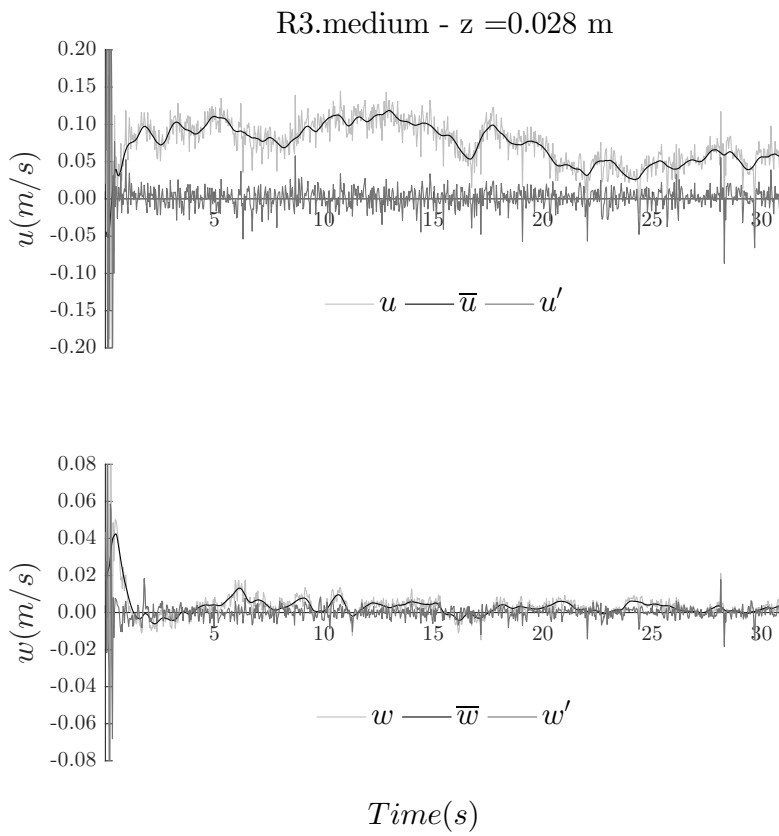
Time(s)

R3.medium - z =0.036 m

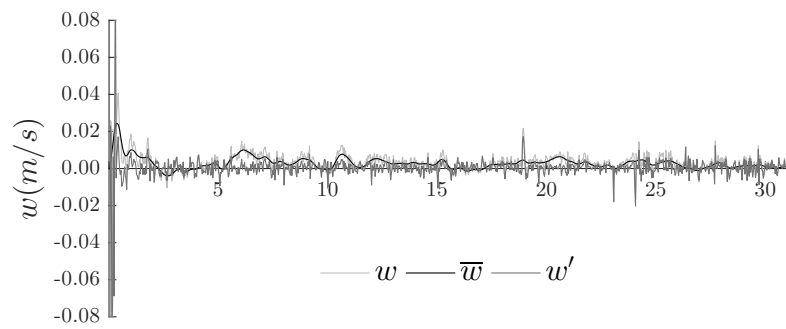
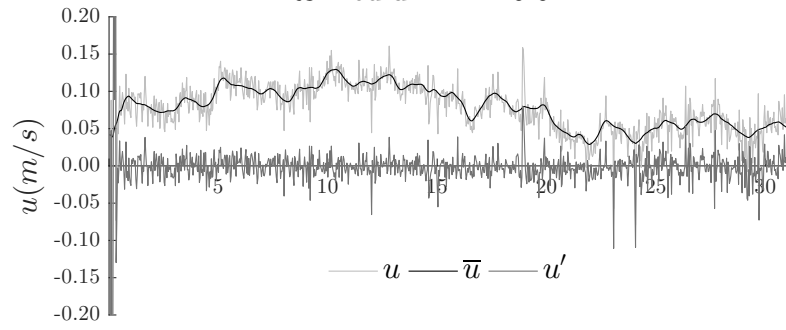


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

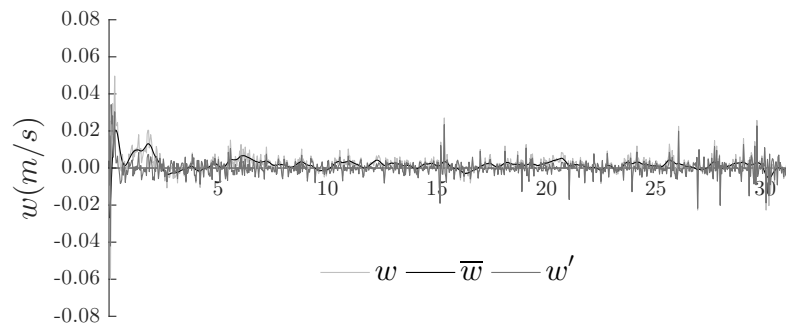
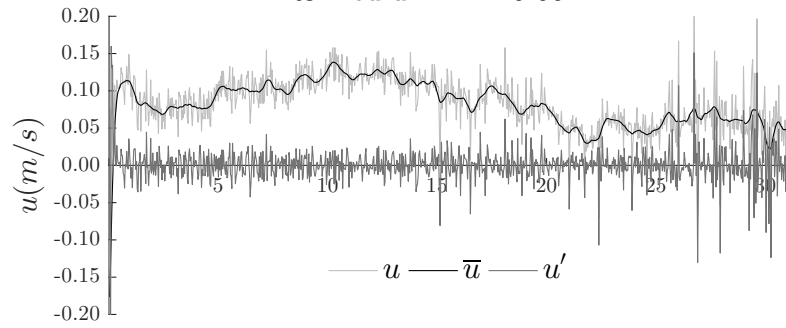


R3.medium - z =0.012 m



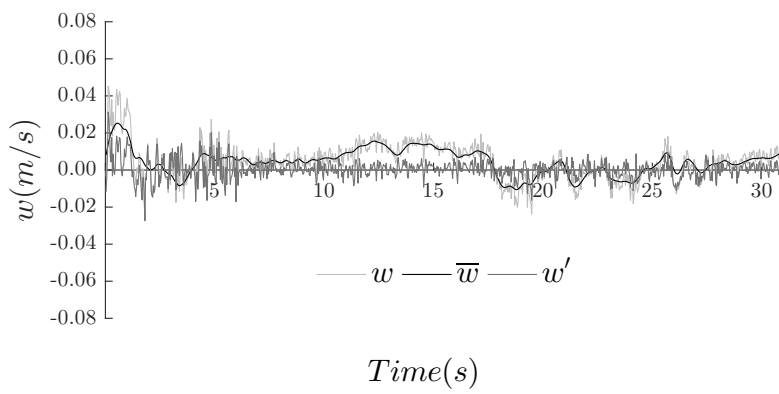
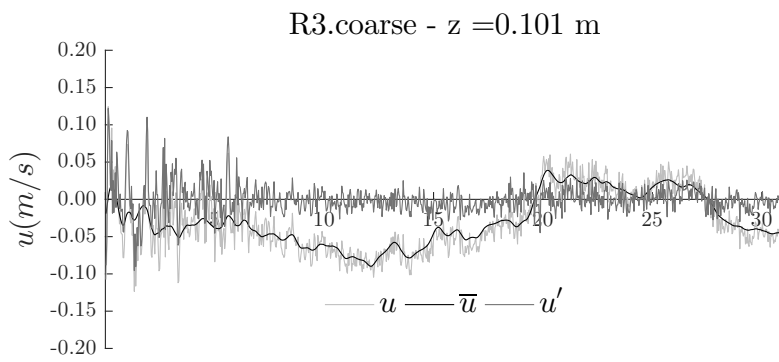
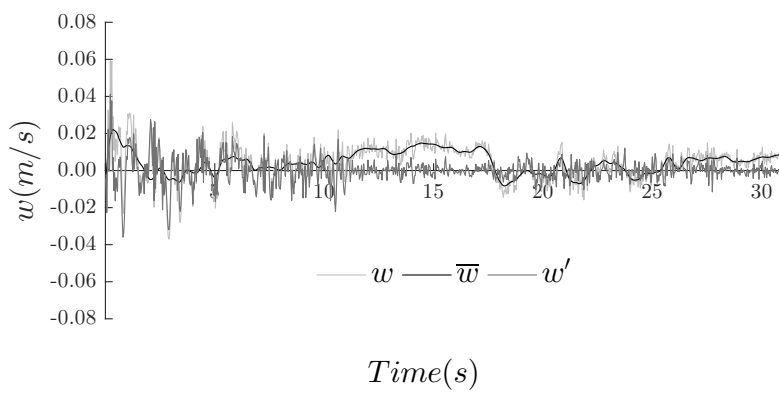
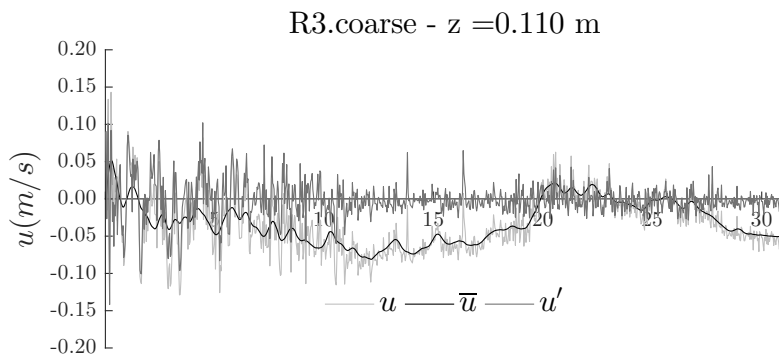
Time(s)

R3.medium - z =0.004 m

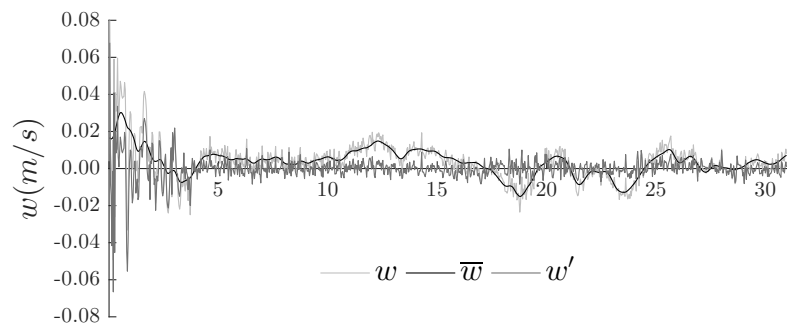
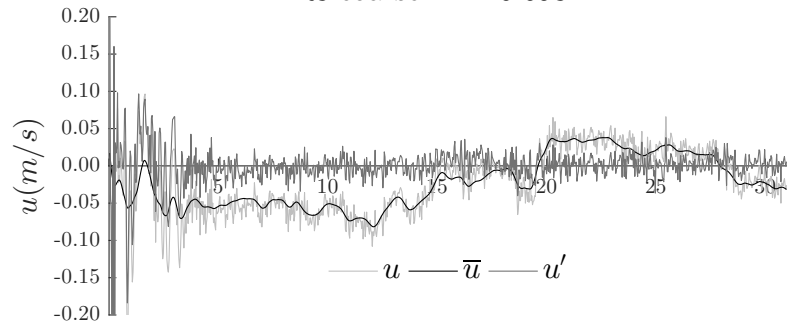


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

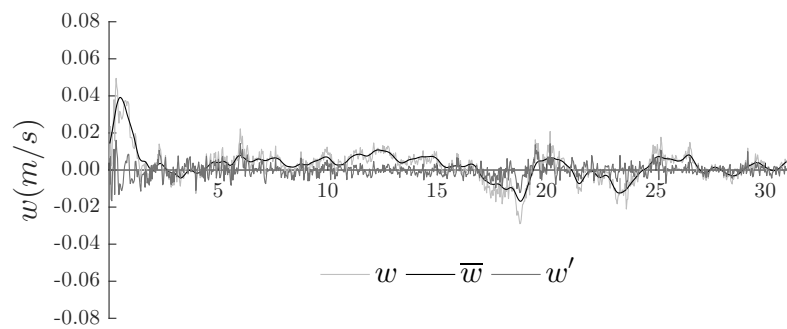
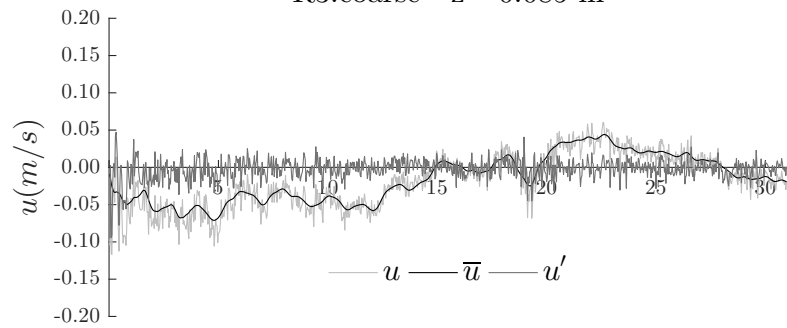


R3.coarse - z =0.093 m



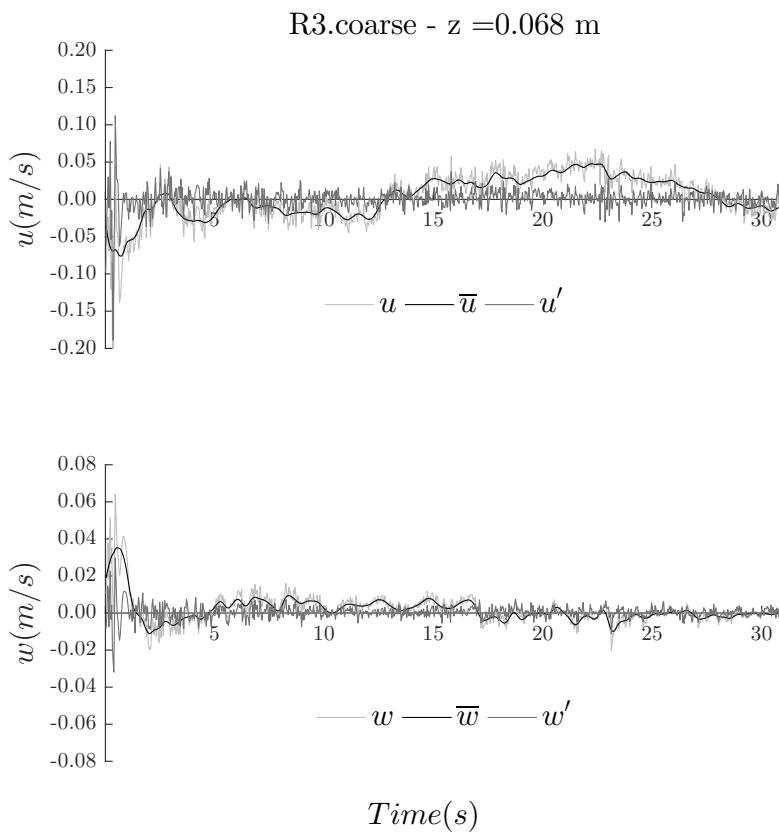
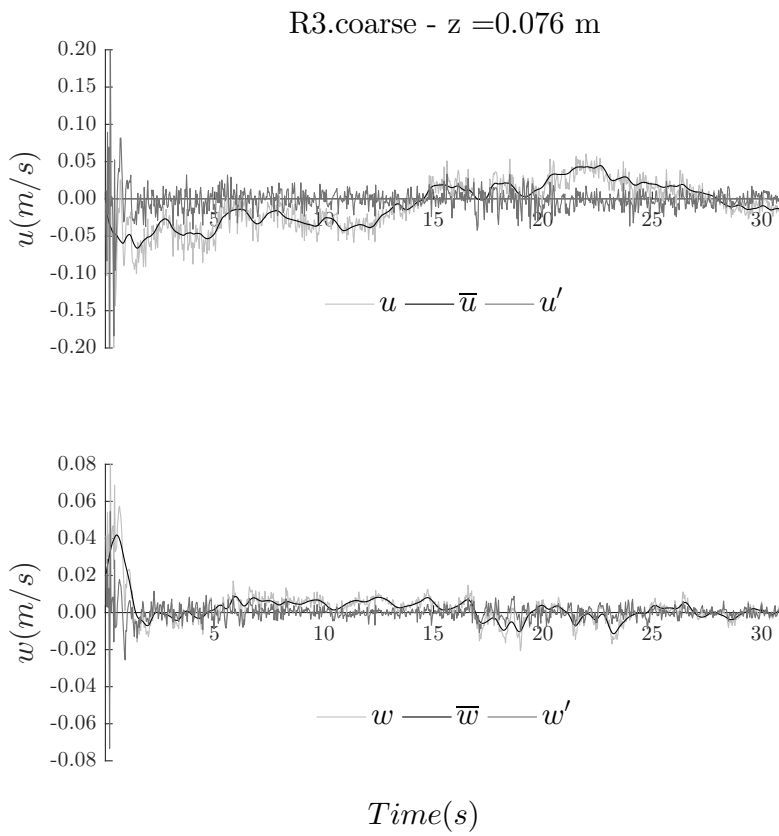
Time(s)

R3.coarse - z =0.085 m

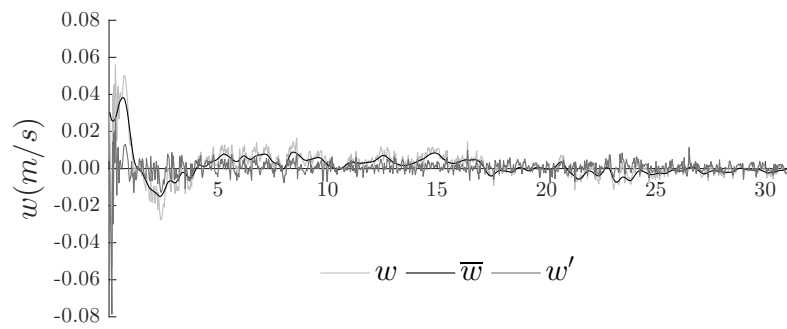
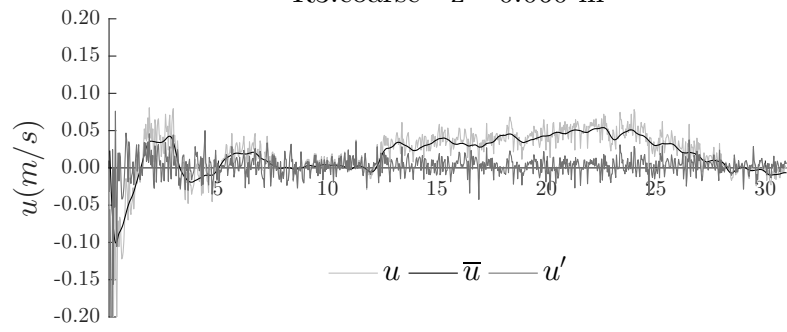


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

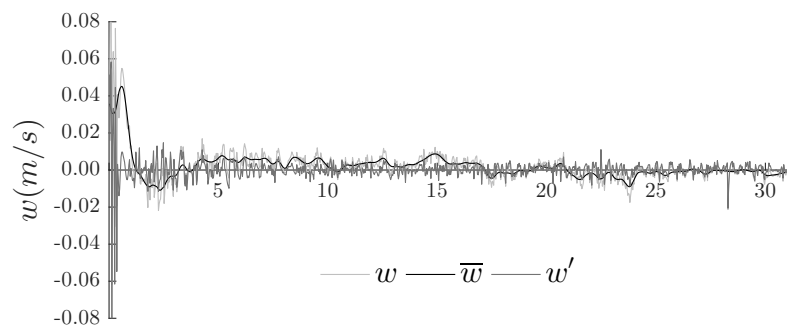
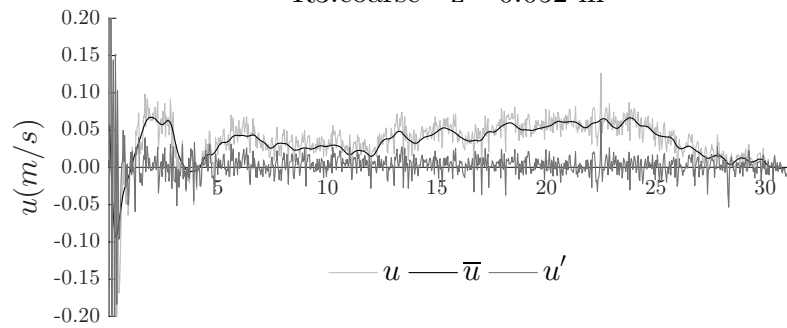


R3.coarse - z =0.060 m



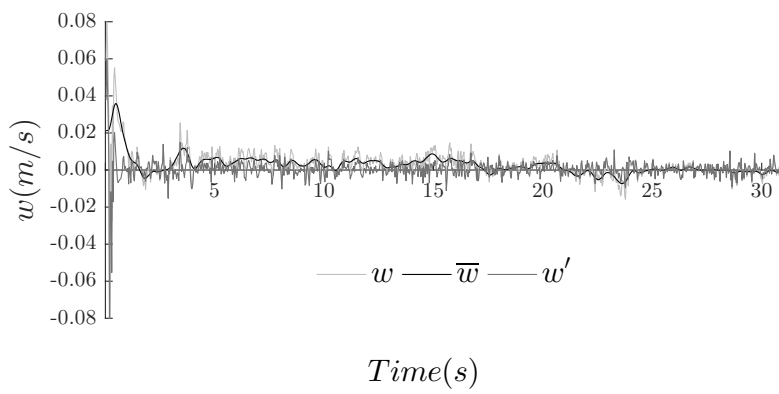
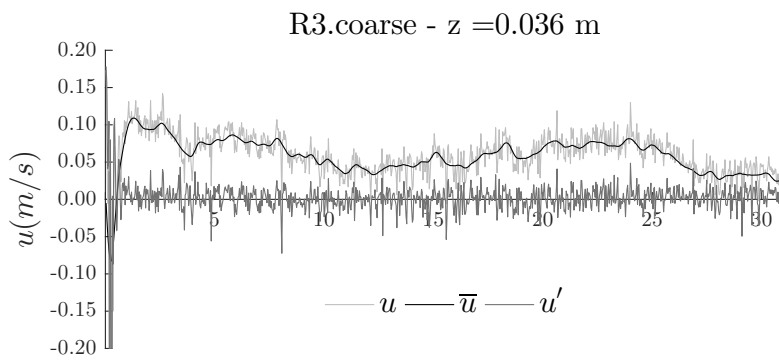
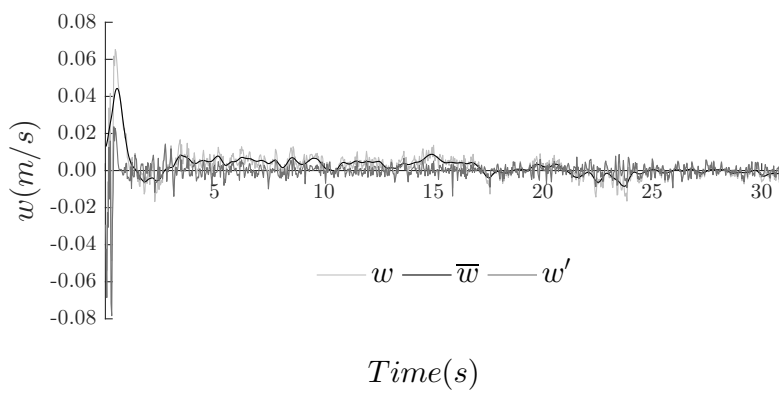
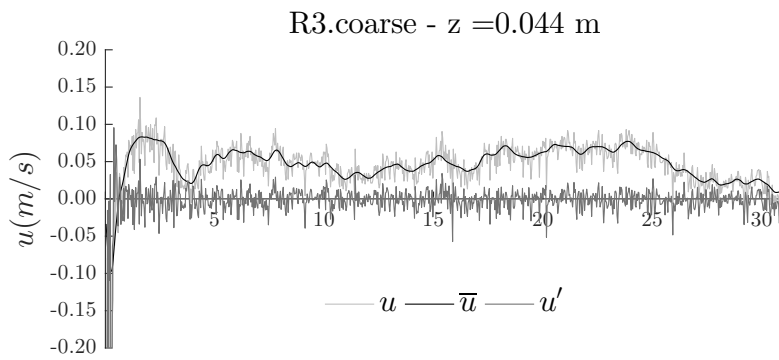
Time(s)

R3.coarse - z =0.052 m

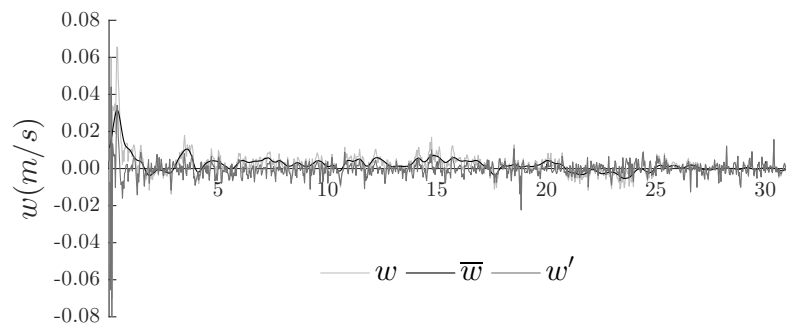
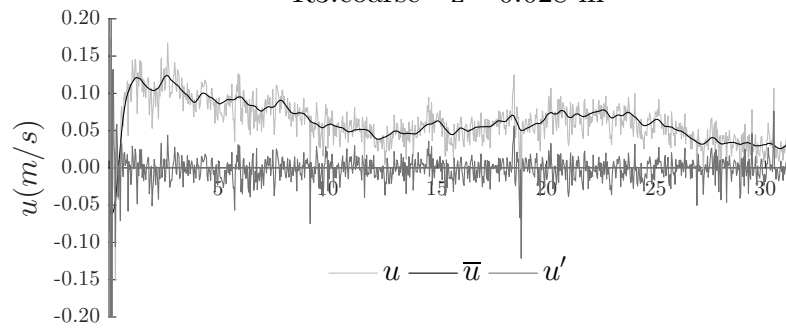


Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

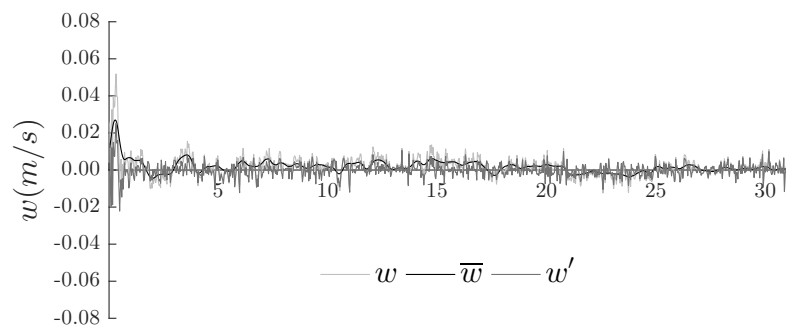
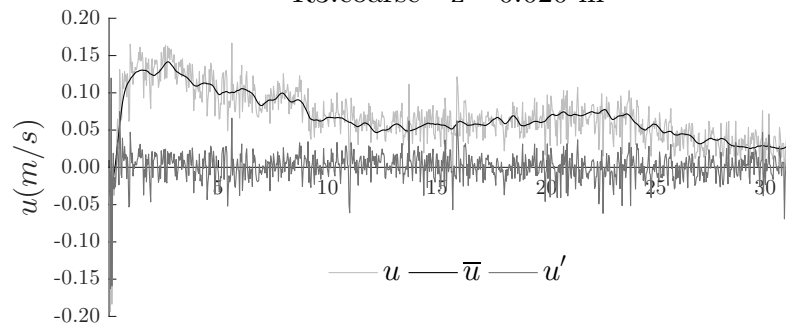


R3.coarse - z = 0.028 m



Time(s)

R3.coarse - z = 0.020 m



Time(s)

Appendix D. Appendix - Instantaneous velocity measurements

