

DNS23 Reynolds–Stress Budgets

July 12, 2026

1 Stations

Position	x/δ_{avg}	H	C_f	Re_τ	Re_θ	β_{ZS}	β_i	β_{RC}	$K \times 10^{-6}$
S1	3.92	1.42	0.0032	856	2949	0.048	0.0016	0.22	0.18
S2	11.92	1.61	0.0019	1058	5556	0.294	0.0168	5.48	0.53
S3	16.61	2.16	0.0007	885	8104	0.178	0.0727	25.46	0.54
S4	19.42	2.65	0.0003	715	9763	0.095	0.1577	54.35	0.29
S5	22.34	2.87	0.0002	726	11088	0.057	0.1557	51.01	0.18
S6	25.43	2.65	0.0004	1022	12223	0.038	0.0485	17.12	0.11
S7	29.14	2.16	0.0009	1527	12955	0.003	0.0031	0.44	-0.01
S8	35.22	1.60	0.0019	2325	12363	-0.181	0.0052	-3.40	-0.12

Table 1: Boundary-layer parameters at the eight stations.

2 Reynolds-stress budgets

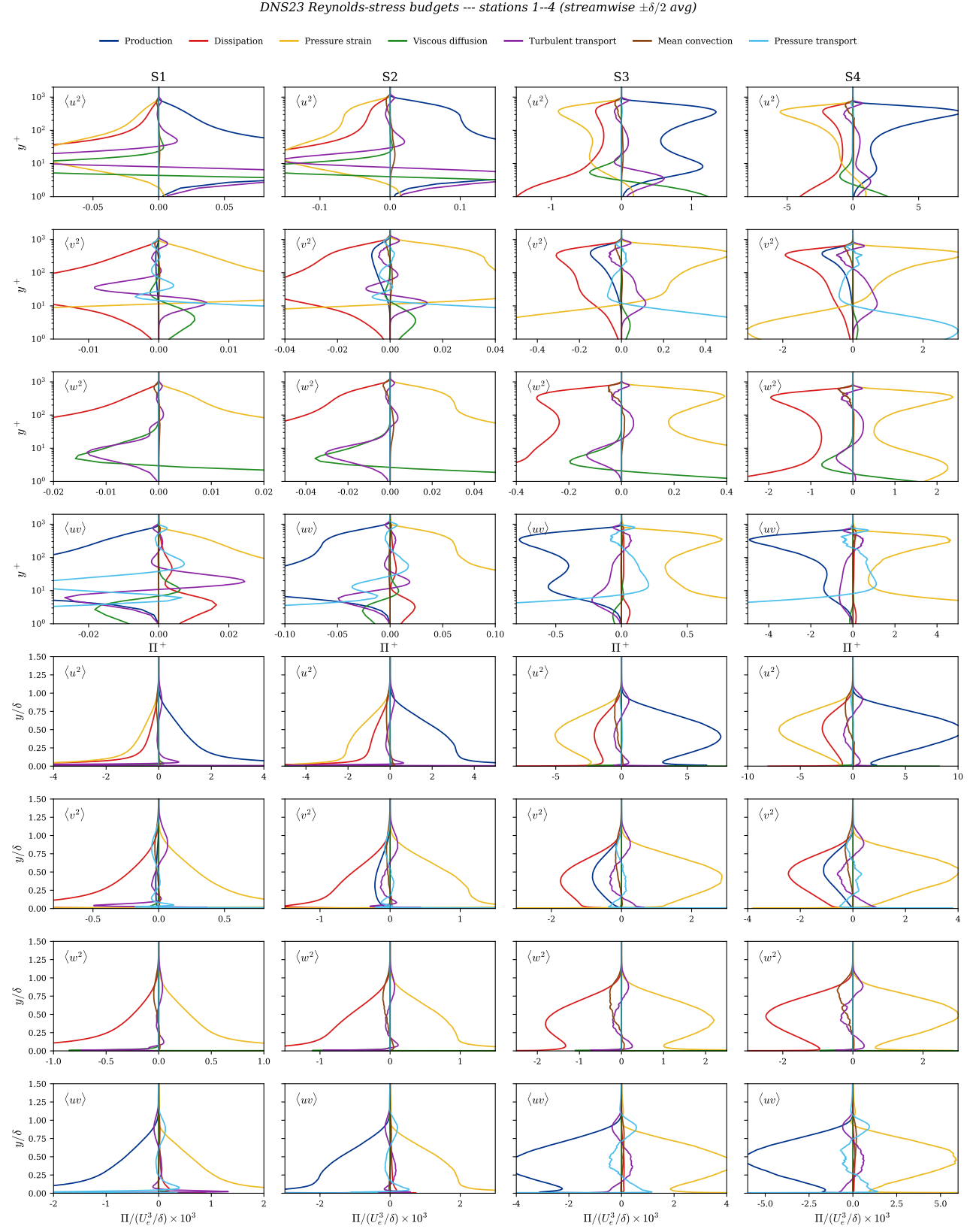


Figure 1: The Reynolds stress budgets (stations S1–S4). The levels and axes are normalized with the friction-viscous scales (a) and outer scales (b). The rows are for $\langle u^2 \rangle$, $\langle v^2 \rangle$, $\langle w^2 \rangle$, and $\langle uv \rangle$ for each figure. Production, dark blue solid line; dissipation, red solid line; pressure-strain, yellow solid line; viscous diffusion, green solid line; turbulent transport, purple solid line; mean convection, brown solid line; pressure transport, light blue solid line.

DNS23 Reynolds-stress budgets --- stations 5--8 (streamwise $\pm\delta/2$ avg)

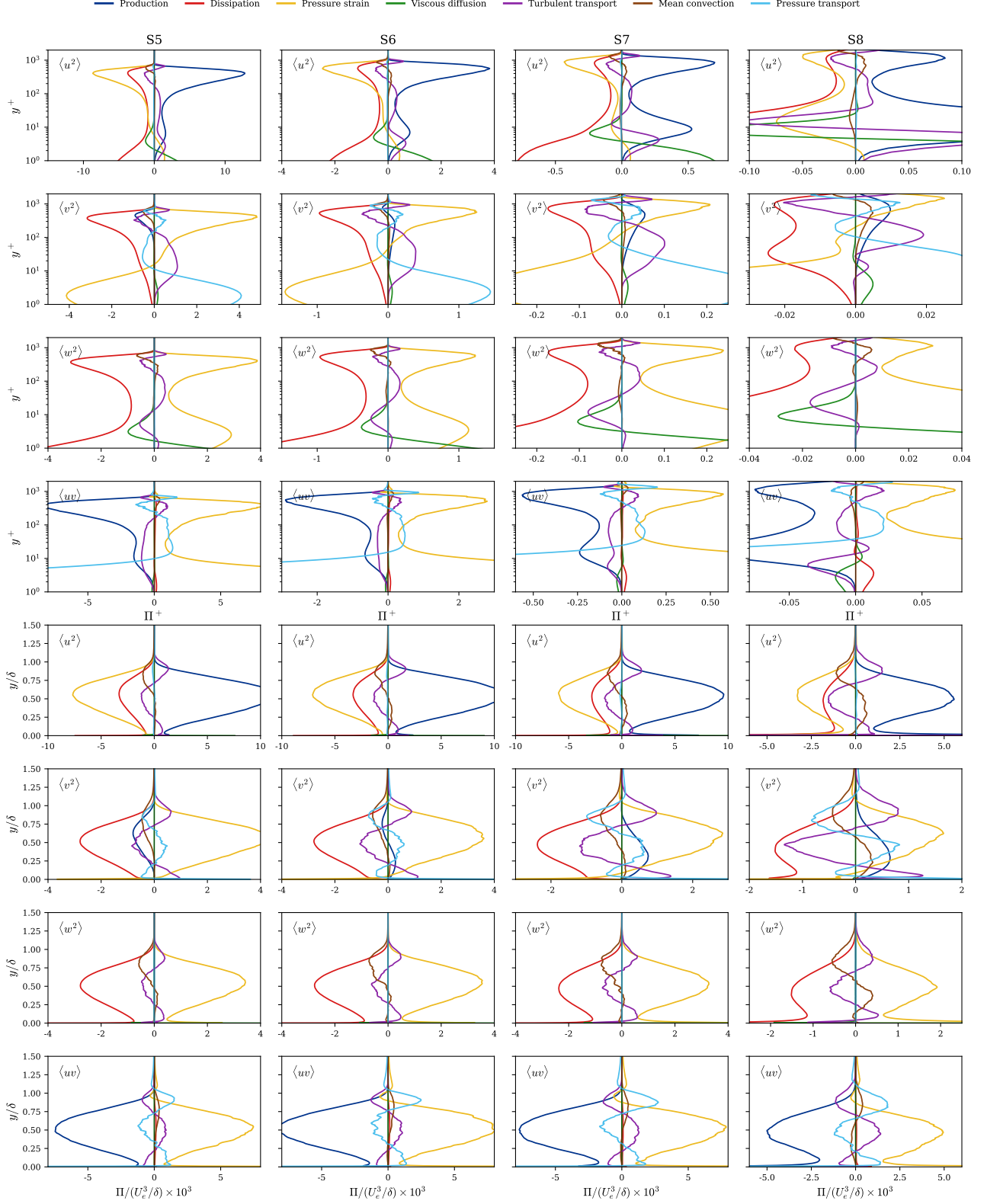


Figure 2: The Reynolds stress budgets (stations S5–S8). The levels and axes are normalized with the friction-viscous scales (a) and outer scales (b). The rows are for $\langle u^2 \rangle$, $\langle v^2 \rangle$, $\langle w^2 \rangle$, and $\langle uv \rangle$ for each figure. Production, dark blue solid line; dissipation, red solid line; pressure-strain, yellow solid line; viscous diffusion, green solid line; turbulent transport, purple solid line; mean convection, brown solid line; pressure transport, light blue solid line.