



Experimental studies of atmospheric turbulence characteristics in the urban canyon



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Turbulence in heterogeneous landscapes

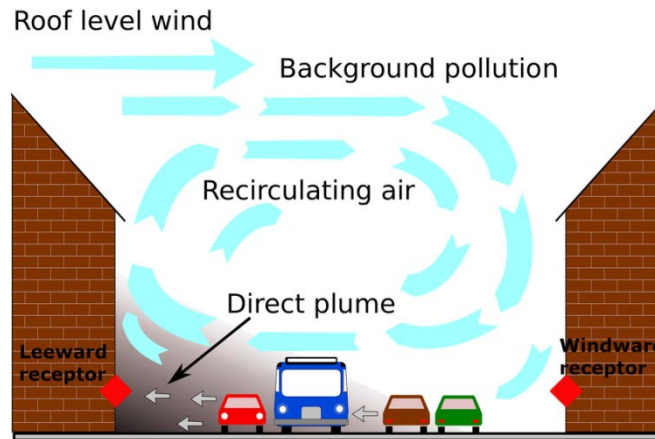


Forest edge, sea shore – a step of different height and length



Lake surrounded with forest, forest glade – roughness among a uniform terrain

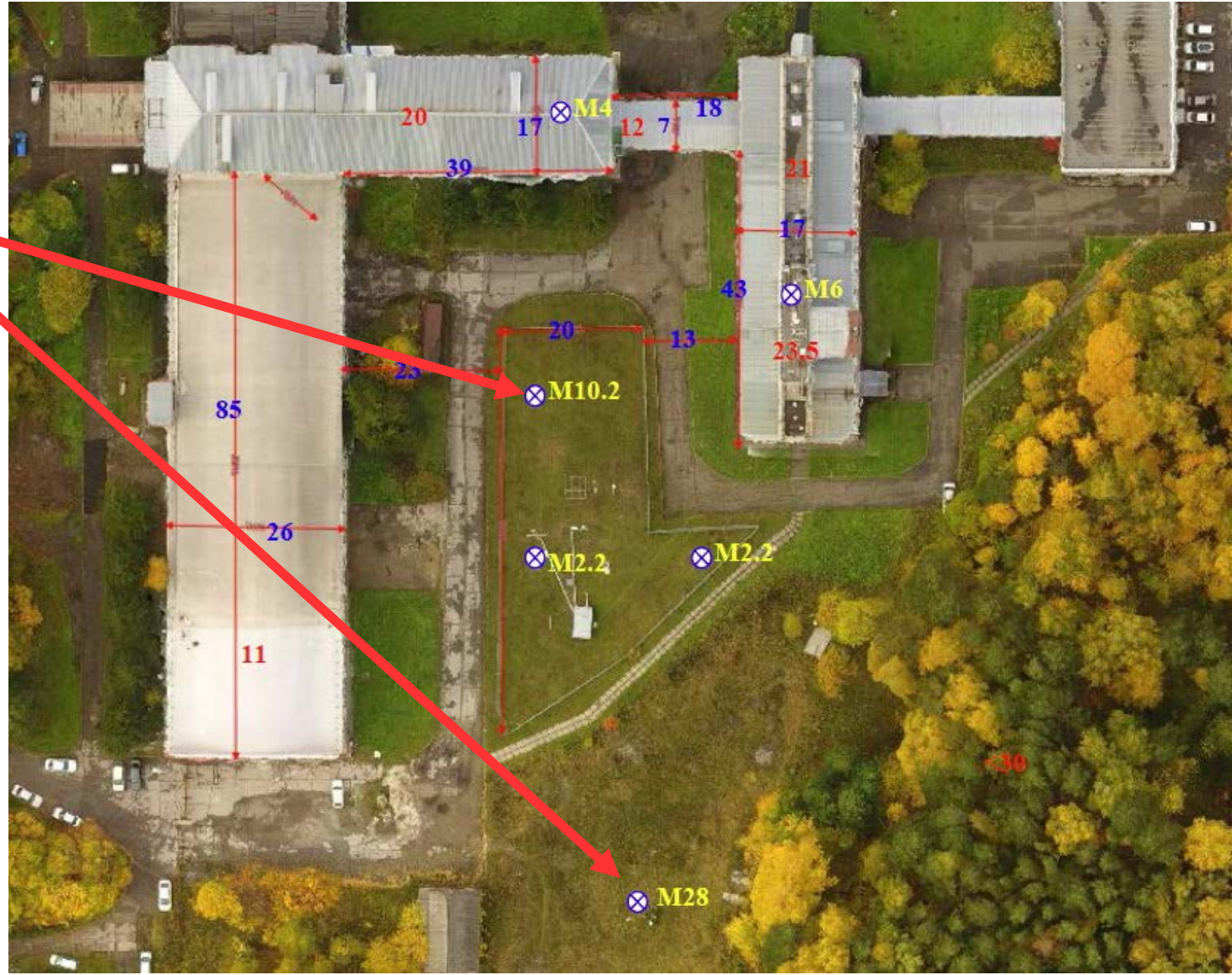
City street – urban canyon



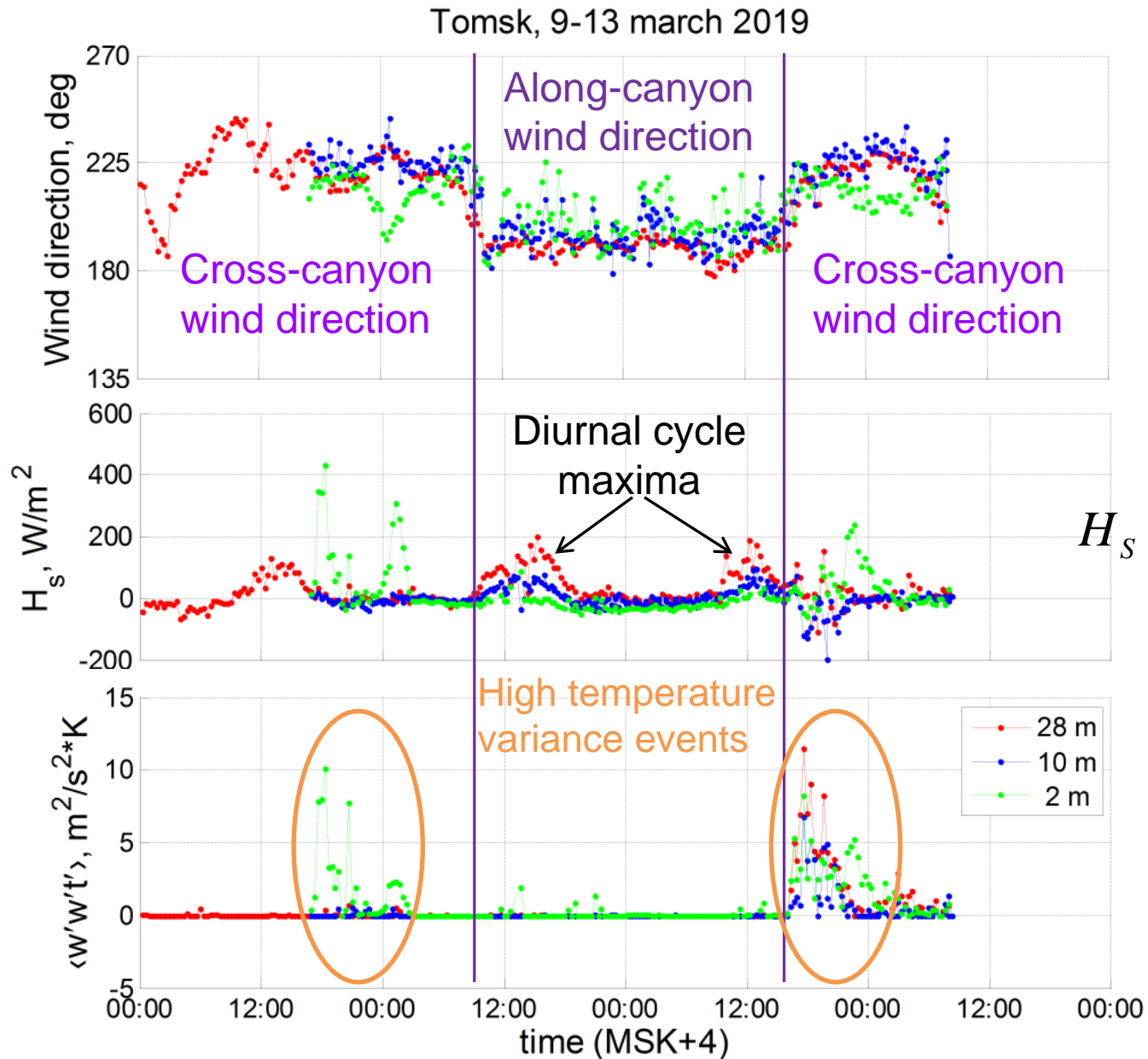
- Monin-Obukhov similarity theory generally fails, no alternative is suggested
- Analytical eddy covariance footprint models are not developed
- Turbulence closures used in Reynolds-averaged 3D models may also become inappropriate

Eddy covariance measurement in Tomsk

5 sonic
anemometers
(SA):
height 2 m – 3 SAs
height 10 m – 1 SA
height 28 m – 1 SA
80 Hz
Model AMK-03,



Primary results



$$H_s = c_p \rho_0 \overline{w'T'}$$