Comparison results for equations related to the Gauss measure

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We present some comparison results concerning a class of elliptic problems whose prototype is

$$-\triangle u + x\nabla u = g \quad \text{in } \Omega, \tag{1}$$

where Ω is an open set of $\mathbb{R}^N$ ($N \geq 2$) not necessary bounded and g belongs to a suitable weighted Lebesgue or Lorentz-Zygmund space. We observe that the operator $L = \triangle - x\nabla$ is the Ornstein-Uhlenbeck operator. It generates a semigroup, whose has the normalized standard Gauss measure as an invariant measure.

As a consequence, we obtain estimates for the solution to the problem (1) in terms of the solution to a simpler problem in one variable.