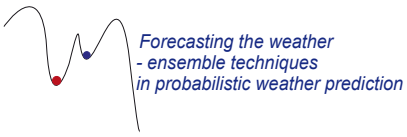
EMS Annual Meeting Abstracts
Vol. 8, EMS2011-604, 2011
11th EMS / 10th ECAM



Newton vs. Münchhausen in upper-Troposphere Dynamics

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Due to current theory, the atmospheric angular momentum (AM) balance depends crucially on existence and magnitude of the planetary-scale AM transport by 'eddies' in the upper troposphere. Its divergence has to provide the torque, which is necessary to realise the upper-troposphere branch of meridional circulation. (In the boundary layer, the torque is provided by surface-friction.)
The torques in adjacent circulation cells are opposed, so that the AM transport can be supposed to mediate a torque-interaction between the circulation cells.
This interaction corresponds to a clear requirement of Newton's Third Law: torques (forces) exist only in interaction with other bodies, and their sum over all interacting bodies is equal to zero.
In Münchhausen's physics, force (and torque) exists without interaction: In a famous tale, Baron von Münchhausen saves himself (and his horse!) from drowning in a swamp-hole by pulling himself up at his hair.

Münchhausen-physics situations arise in the dynamical analysis of the phenomenological torque exerted by a single 'eddy'.
The local AM transport of the single 'eddy' is defined by the difference in zonal velocity between the pole-ward and equator-ward branches (Δu) multiplied with meridional velocity-magnitude ([U+2502]v[U+2502]) (the complete formulations include the local radius of rotation but it is omitted here for simplicity reasons). The direct definition with velocities relative to Earth's rotating surface is clearly phenomenological and not dynamical. It is not related to Newton's Laws, which are based on inertial frames of reference (Newton I).
In dynamical analysis, it turns out that the (torque-related) zonal equation of motion for an AM-transporting single 'eddy' producing a phenomenological torque by transport divergence does not contain torque-interaction with bodies outside the 'eddy'.

The most-simple case for demonstration of the Münchhausen-character of the 'eddy'-torque is a solitary closed 'eddy' generated by a high-pressure system in its centre. The meridional 'eddy'-branches interact with each other by the torques transmitted through the pressure field, the sum of torques being zero due to Newton III because no other body is interacting with the 'eddy'. The zonal 'eddy'-branches interact with each other by the forces transmitted through the pressure field in the same manner. At the 'corners', inertial-motion components complete the curvature, thus no interaction to the exterior of the 'eddy' exists at all.
With the meridional branches having equal zonal velocities, phenomenological AM transport is zero and no phenomenological torque can exist. In case of different zonal velocities, there is phenomenological AM transport. Necessarily, a phenomenological torque to the exterior is produced because the transport term becomes zero in the turning-regions of the 'eddy'.
However, the 'eddy' is proved to be torque free because the only torque-interaction is internal, as described above. Due to absence of exterior interaction, the 'eddy'-torque belongs to the Münchhausen universe and cannot enable meridional circulation. The same can be demonstrated in several additional ways of dynamical analysis.

Should the previous analysis be ignored in favour of maintaining the 'established' ideas of upper-troposphere dynamics? Or should there be efforts to formulate new ideas that are in accordance with Newtonian physics?