



## **Solifluction processes and landforms in the Arctic and Subarctic**

**A.G. Lewkowicz**

Department of Geography, University of Ottawa, Ottawa, Ontario, Canada  
(alewkowi@uottawa.ca / Fax: +1 613-5625145 / Phone: +1 613-5625800X1067)

Solifluction processes are controlled at a regional scale by ground temperature and at a local scale by gradient, soil type, soil moisture and vegetation. One-sided freezing in seasonally frozen ground and the discontinuous permafrost zone is replaced by two-sided freezing in continuous permafrost. Turf-banked and stone-banked solifluction lobes, which are found above treeline in seasonally frozen ground and discontinuous permafrost, appear to be rarer in continuous permafrost and in lowland environments are replaced by solifluction sheets, and even more commonly by undifferentiated solifluction. Vertical velocity profiles are convex downslope in cold continuous permafrost and concave downslope in areas of seasonal frost reflecting the location of ice lensing in the active layer. In between these extremes, they appear to be S-shaped with elements of both types of movement. Further investigation is needed into the temperature (and possibly moisture) boundaries between these behaviours which will also determine the response of solifluction processes and landforms to climate change.