Geophysical Research Abstracts, Vol. 9, 04844, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04844

Spiral troughs on the Martian north polar ice cap

A.C. Fowler (1) and **R.J. Zammett** (1)
(1) Mathematical Institute, Oxford University (fowler@maths.ox.ac.uk)

The spiral troughs formed on the Martian polar ice caps represent an intriguing feature in areocryological processes. Most obviously, they represent spiral waves commonly seen in reaction-diffusion systems. They have been explained by the concept of dust-albedo feedback, suggested by Howard and incorporated into a mathematical model by Ng and Zuber. We study a model similar to that of Ng, in which katabatic winds transport dust along the ice cap, but we allow for slope dependence of the katabatic winds. In our model, the troughs develop not as stable travelling wave features, but as the precursor to disintegration of the ice cap. We thus suggest the possibility that the Martian ice caps may be undergoing obliquity-induced collapse as part of continuing climate change on Mars.