



## **Reproducing surface road temperature by means of a land surface numerical scheme**

N. Loglisci (1), R. Bonanno (1), and C. Cassardo (2)

(1) A.R.P.A. Piemonte - Sistemi Previsionali - Via Pio VII, 9 - 10135 Torino (Italy) - Phone +39 01119680293 Fax +39 01119681341 - e-mail n.loglisci@arpa.piemonte.it - r.bonanno@arpa.piemonte.it, (2) University of Turin – Department of General Physics - Via P. Giuria,1 – 10100 Torino (Italy) - Phone +39 0116707407 Fax +39 011658444 - e-mail cassardo@ph.unito.it

The land surface model UTOPIA (University of TORino land Process Interaction in Atmosphere) simulates the energy and hydrological processes at the atmosphere/soil interface. UTOPIA is forced with atmospheric data recorded at the standard WMO levels.

In this work UTOPIA algorithms reproducing the surface temperature have been updated taking into account a new soil type: pervious concrete. This soil type represent the kind of asphalt most used for highways construction. The model has been tested for the period 2007-2010 on eight monitoring point located at different places within two automatic monitoring networks: one belonging to the Italian company for highway management (Autostrade per l'Italia S.p.a.), the other in charge of the environmental agency of Piedmont region (ARPA Piemonte).

Realistic reproductions of the daily and annual cycle of surface concrete temperature suggest the model to be used in a forecasting way using numerical model outputs of a Limited Area Model as forcing data. In this way UTOPIA could be tested and used in the decision-making activities for road management in winter time when cold temperatures and snowfall cause problems on the road system management as well as car accidents.