2004 TAIWAN INTERNATIONAL SCIENCE FAIR

CATEGORY : Biochemistry

PROJECT : Montioring of Cryogenic Features along Roads in Megino-Kangalassky Region,Yakutia

AWARDS : Biochemistry Third Award

SCHOOL : Maya Gymnasia

FINALISTS : Katerina Sleptsova

COUNTRY : Russian Federation

Category: Environmental Science (soil science)

Title: Monitoring of Cryogenic Features along Roads in Megino-Kangalassky Region, Yakutia

Name: Katerina Sleptsova

Country: Russia

Abstract

One of the anthropogenic influences on the permafrost landscapes is deforestation and breach of the surface cover at the road constructions. On these areas a development of various cryogenic and postcryogenic processes and features (thermosubsidence, knobs (bilars, baydjarakhs), ravines, small lakes - djyodje) is being observed. Such features can be observed on the territory of Megino-Kangalassky Region, which is situated in the Central Yakutia, as well.

During the period from 1998 to 2003 the author carried out monitoring studies of cryogenic features along three roads. Ten areas measuring twenty square metres were put in all. During 6 years of research about 1520 measurements of cryogenic formations parameters were made. Based on the results, it is concluded that elimination of the shadowing effect by trees and removal of the surface cover along the roads have caused thawing of shallow-lying ice wedges, as well as development of various cryogenic processes and features. In this paper, the author presents the basic technologies which are used in road construction in permafrost areas and, based on the research results, proposes a set of measures for rehabilitation of the roadside areas.