



# 第 59 回岩手大学 COE フォーラム

岩手大学 21 世紀 COE プログラム「熱-生命システム相関学拠点創成」では、関連分野において国内外で活発に研究をされている方をお招きしてフォーラム（セミナー）を開催しています。今回は、昨年 11 月に連合農学研究科に赴任された Larry Lopez 博士をお招きしました。日露共同プロジェクトで進められた地球温暖化と関連した東シベリアに頻発する山火事と永久凍土地帯減少の因果関係についてお話をさせていただきます。講演は英語で行われますが、幅広い視点からのイントロダクションをお願いしました。

お忙しいとは思いますが、多くの方々にご参加いただきますようお願い申し上げます。

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日時：2008 年 1 月 25 日（金）16:40～18:10

場所：岩手大学農学部 2 番教室

## Dr. Larry Lopez

（岩手大学大学院連合農学研究科）

## Forest Fires

### Causes and implications of permafrost thawing in the boreal forest of Eastern Siberia, Russia

The largest boreal forest in the world extends on the continuous permafrost region of eastern Siberia in Russia. Within this area, large concentration of ice wedges (6 to 50 meters long) in the permafrost is found in Central Yakutia. Present disturbances, increasing air temperature, extreme rain events, forest fires and forest logging are showing signs of permafrost degradation by deepening of the active layer (layer of soil that thaws in summer and freezes in winter). The impact that permafrost thawing can have on accelerating global warming because of the release of carbon currently trapped in the permafrost is discussed. In the early Holocene, climate changes caused the irreversible degradation of some portions of ice-rich permafrost that resulted in saline grassland thermokarst depressions where reforestation has been hindered. Salt concentration reaches (EC, electric conductivity) values of  $5.4 \text{ mS cm}^{-1}$  at 2 meters deep in the permafrost under forest soils which in case of thawing becomes part of the water stream upward to the root zone. According to some part of the results of the five-year Russian-Japanese project, which involved intensive monitoring of environmental variables combined with vegetation and soil characteristics, fire, despite of its recurrent nature and large scale impact, is assimilated by the forest. The early stages of fire impact appeared to degrade the permafrost below the forest soil but rapid vegetation regeneration cools soil temperatures aggrading the active layer to its original depth. This process takes between 10 to 15 years whereas the full cycle of larch forest regeneration may take approximately 100 years. Although, fire in its present condition do not produce large scale permanent permafrost degradation, increasing frequency of fires due to global warming could have a serious impact on forest regeneration and thus in permafrost recovery.