Microbiological methane emission in arctic and sub-arctic ecosystems of Siberia

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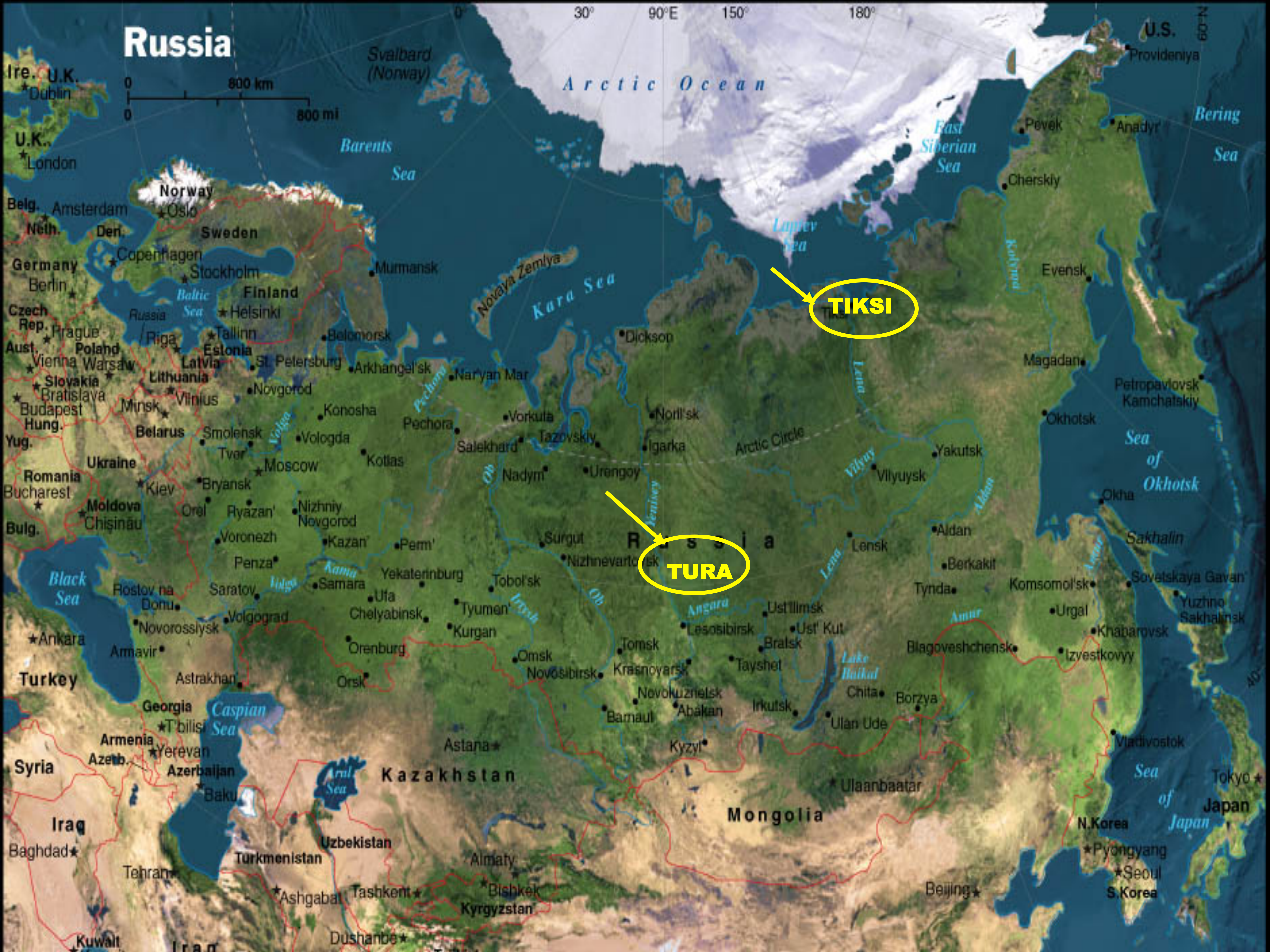
Russia
0 800 km
0 800 mi
Arctic Ocean
Barents Sea
Kara Sea
Laptev Sea
East Siberian Sea
Bering Sea
Sea of Okhotsk
Sea of Japan
Black Sea
Caspian Sea
Aral Sea
Baltic Sea
Lake Baikal
Svalbard (Norway)
Novaya Zemlya
Sakhalin
Arctic Circle
TIKSI
TURA
Russia
Kazakhstan
Mongolia
Norway
Sweden
Finland
Estonia
Latvia
Lithuania
Belarus
Ukraine
Moldova
Romania
Poland
Germany
Turkey
Georgia
Armenia
Azerbaijan
Uzbekistan
Turkmenistan
Kyrgyzstan
Iraq
Iran
Syria
Japan
N.Korea
S.Korea
U.S.
Moscow
St. Petersburg
Murmansk
Arkhangel'sk
Novgorod
Vologda
Kotlas
Pechora
Vorkuta
Salekhard
Nadym
Urengoy
Noril'sk
Igarka
Dickson
Yakutsk
Vilyuysk
Lensk
Aldan
Magadan
Okhotsk
Evensk
Pevek
Anadyr'
Cherskiy
Provideniya
Petropavlovsk Kamchatskiy
Yekaterinburg
Perm'
Kazan'
Samara
Ufa
Chelyabinsk
Tyumen'
Tobol'sk
Surgut
Omsk
Novosibirsk
Tomsk
Krasnoyarsk
Irkutsk
Ulan Ude
Chita
Khabarovsk
Vladivostok
Volgograd
Saratov
Voronezh
Rostov na Donu
Novorossiysk
Astrakhan'
Orenburg
Orsk
Kurgan
Barnaul
Novokuznetsk
Abakan
Kyzyl
Bratsk
Ust' Kut
Tayshet
Tynda
Blagoveshchensk
Komsomol'sk
Sovetskaya Gavan'
Yuzhno Sakhalinsk
Astana
Almaty
Bishkek
Tashkent
Ashgabat
Dushanbe
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T'bilisi
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Minsk
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Vienna
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Bratislava
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Chișinău
London
Dublin
Amsterdam
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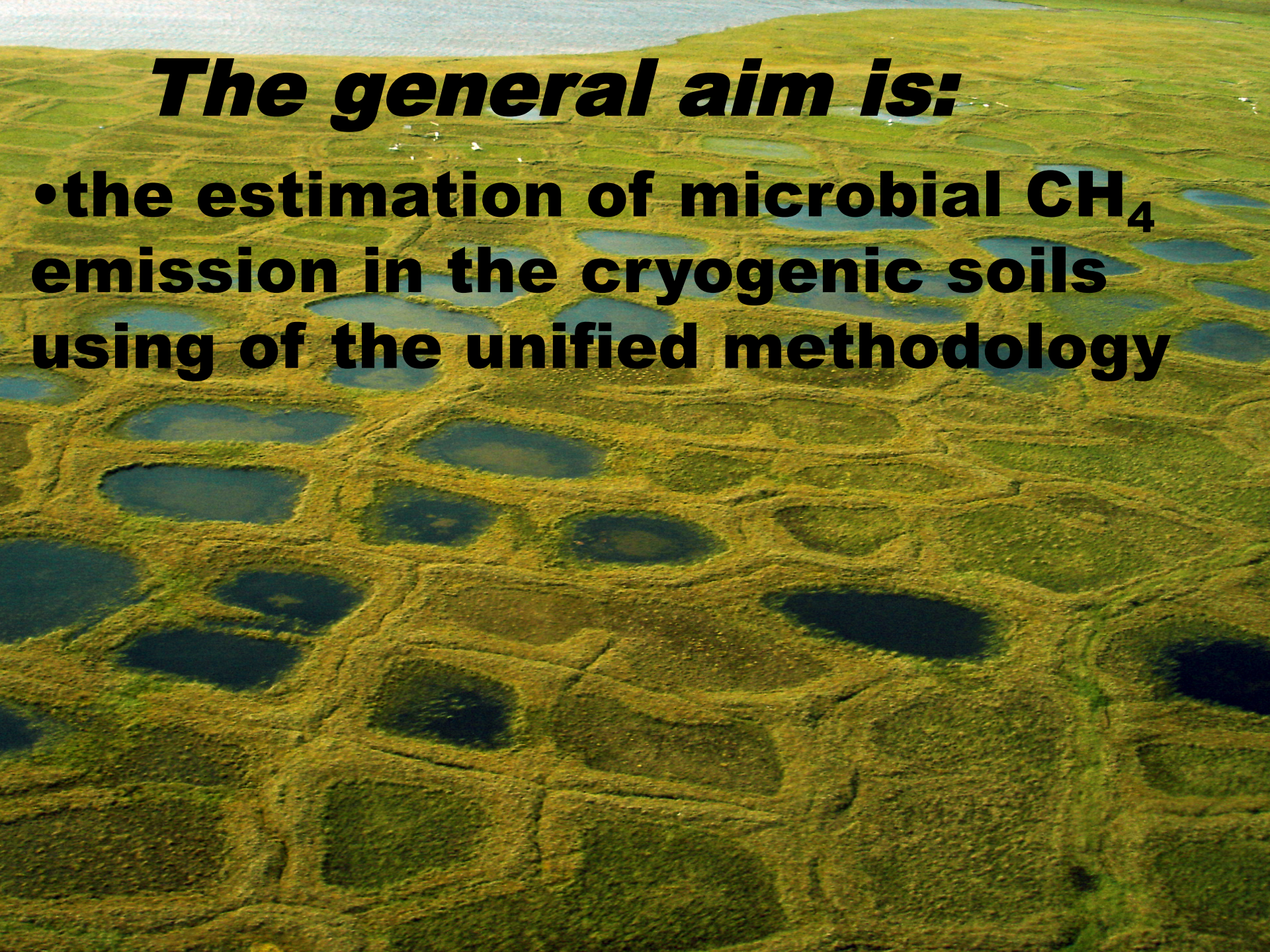
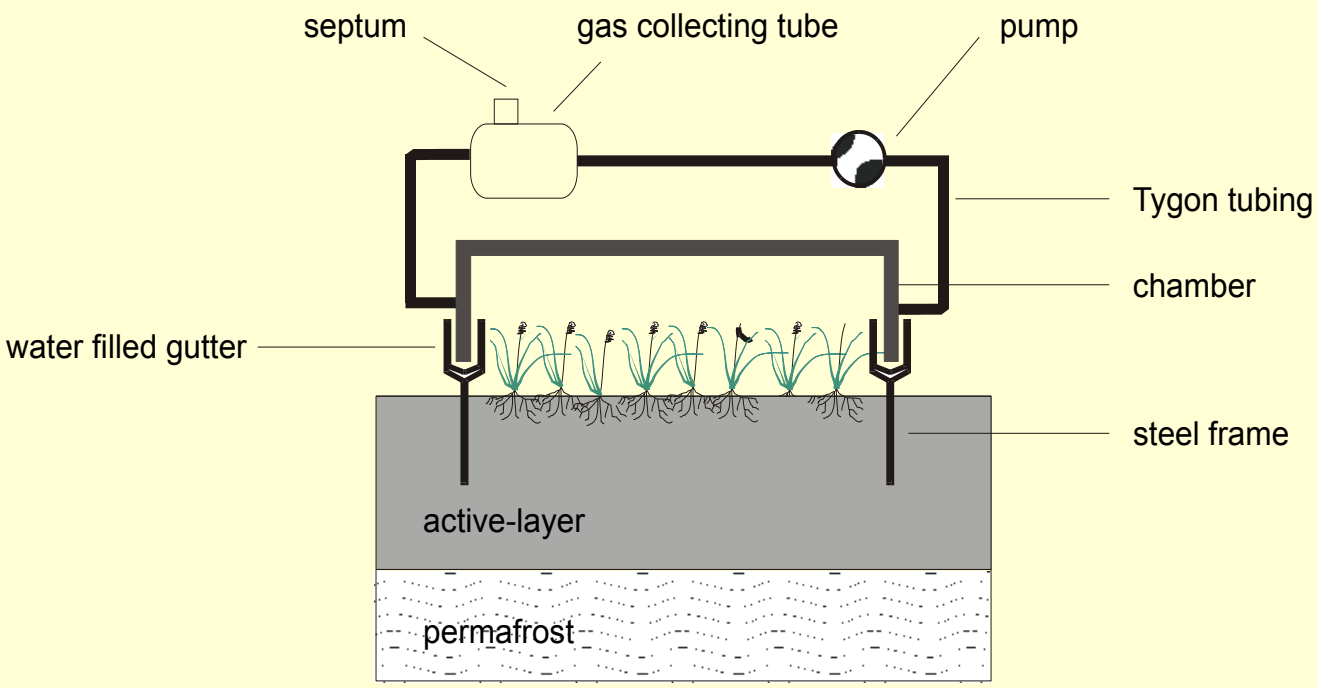
Aldan



The general aim is:

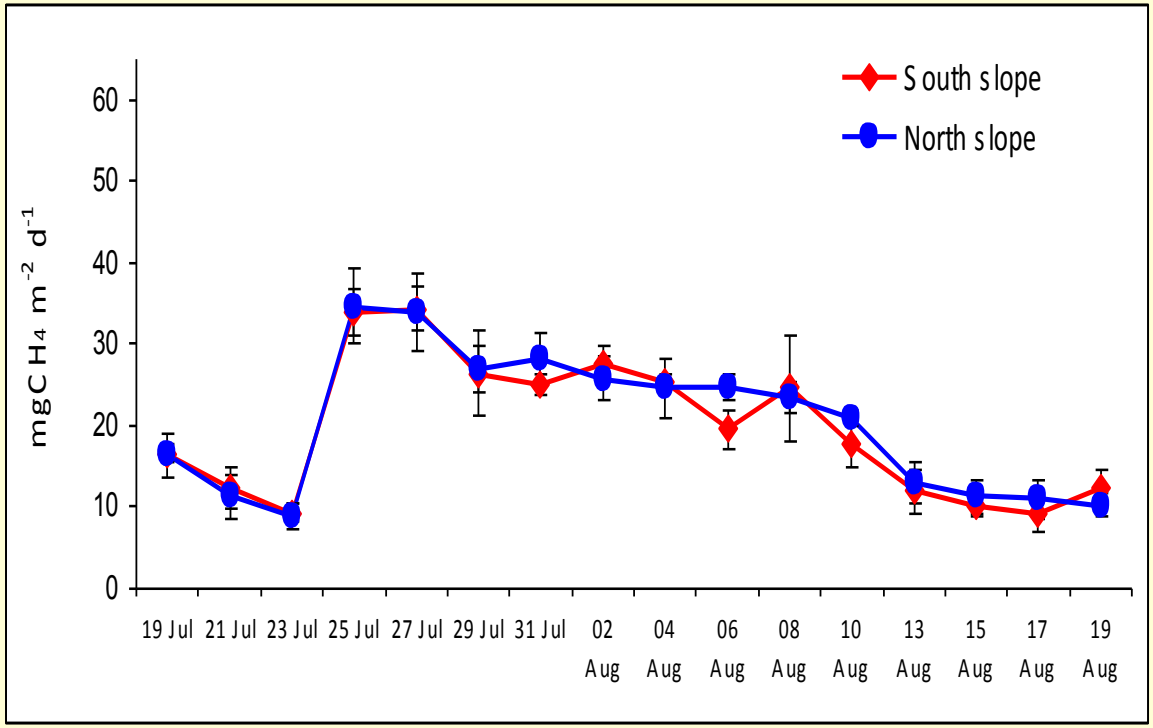
- **the estimation of microbial CH_4 emission in the cryogenic soils using of the unified methodology**

Principle of chamber measurements



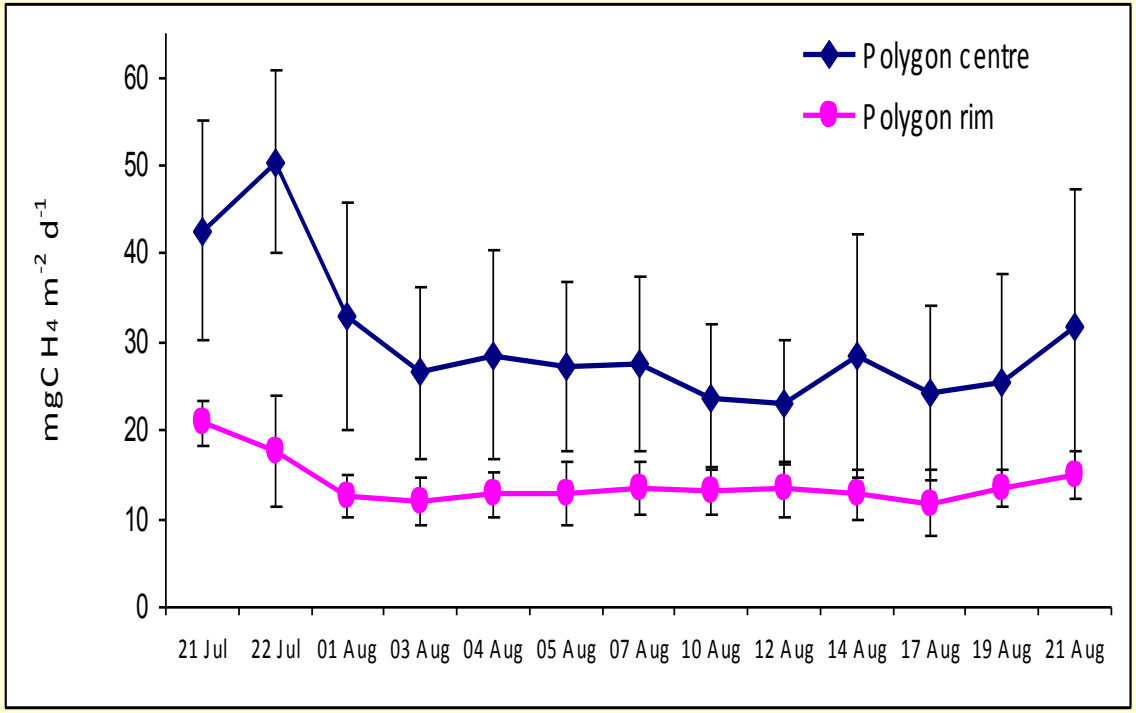
We used the method of closed chambers (Wagner et al., 2003) for fixing the methane released from the soil surface

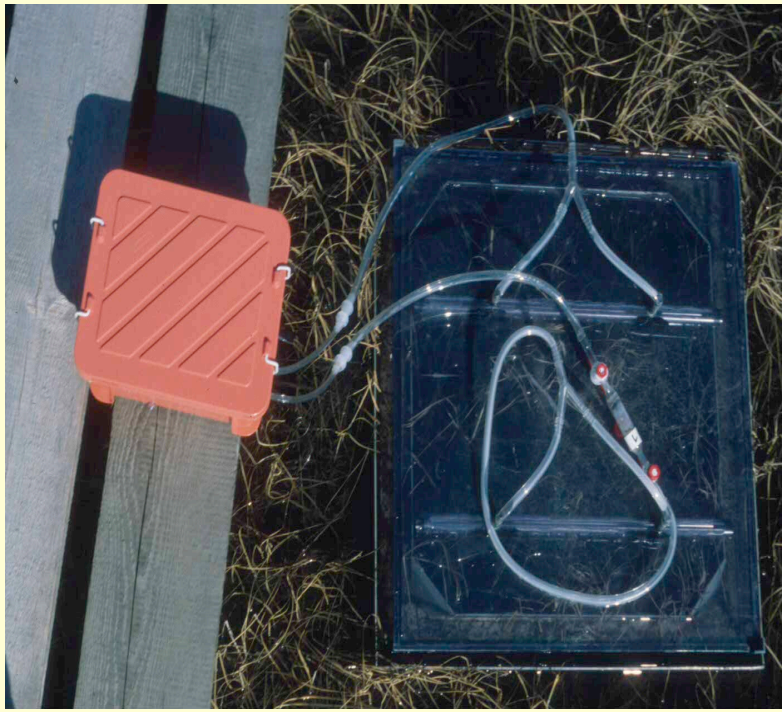
Methane emission in Tura



The value of the methane emission in the forest ecosystem varied from 8.9 to 34.7 mg/m^2/day and depended on the amount of precipitations incoming from the atmosphere to the soil.

Methane emission in Lena Delta (is. Samoylovskii)





It was determined, that the amount of CH_4 released from the soil surface in tundra was from 11.7 to 50.4 mg/m^2/ day. Differences in the methane flux between the center of ice-wedge polygon and its rim were 1.7-2.8 times.

CONCLUSION

- It is clear, a tundra ecosystems are CH_4 source to the atmosphere due to large overwetting territories.
- As we found the methane flux in tundra ecosystem only in 2.2 times higher than in the forest one, we suggest to take into account the CH_4 efflux from the forest ecosystem to the global carbon budget too.

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Спасибо за внимание
Thanks for your time