

**Federal Service for Hydrometeorology
and Environmental Monitoring**



**VOEIKOV
MAIN GEOPHYSICAL
OBSERVATORY**

Since 1849

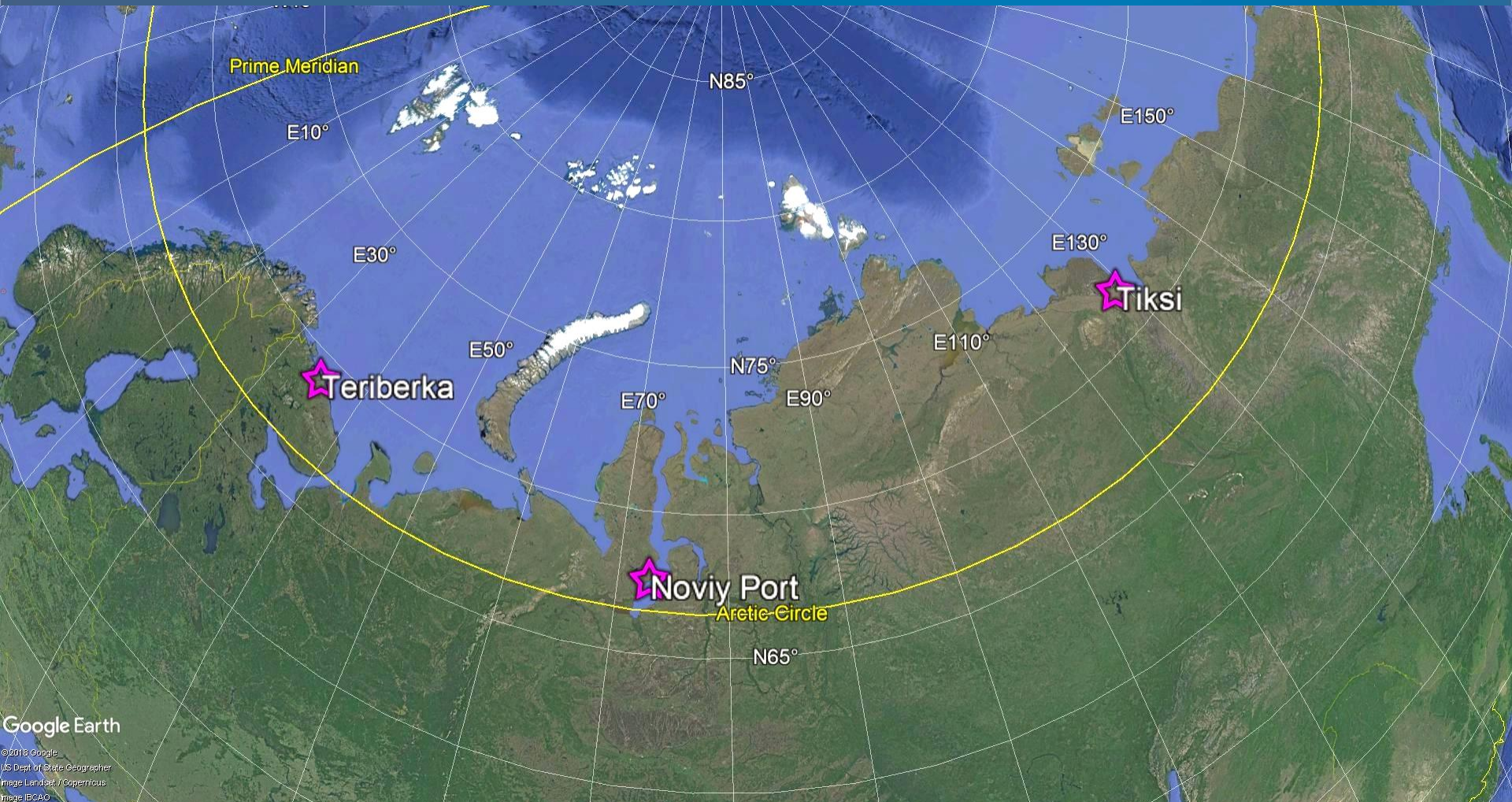
Atmospheric composition monitoring in the Arctic. MGO activities.

Ivakhov V., Solomatnikova A., Paramonova N., Pavlova K.

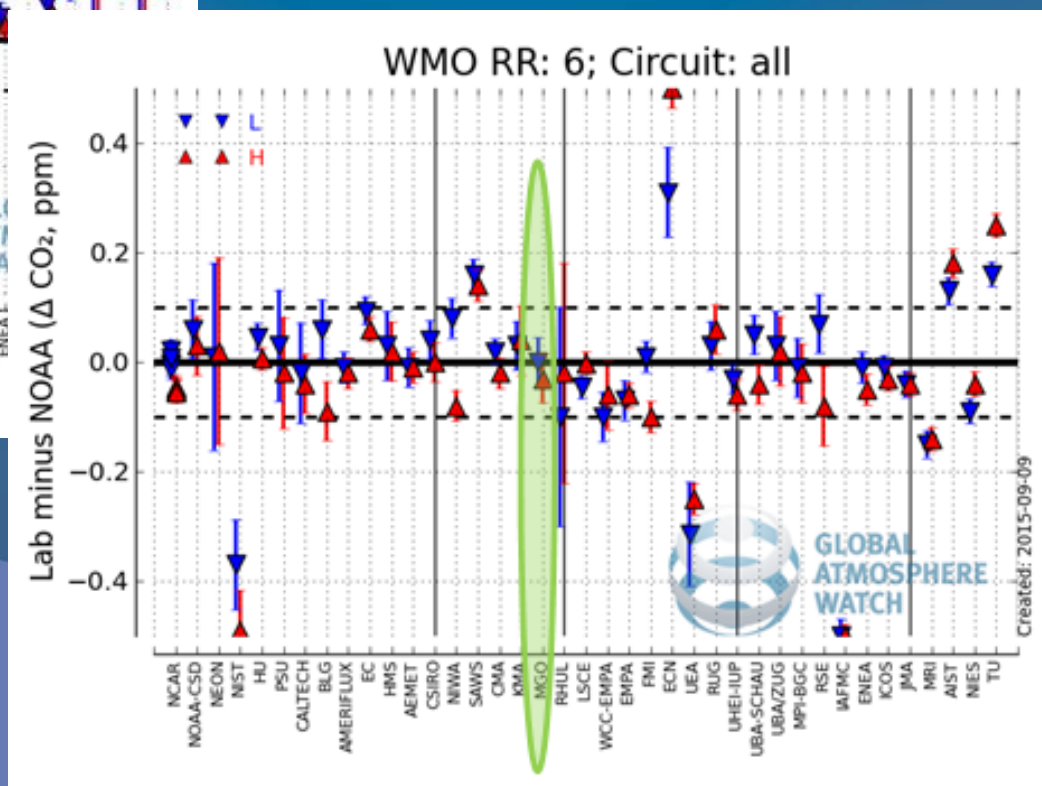
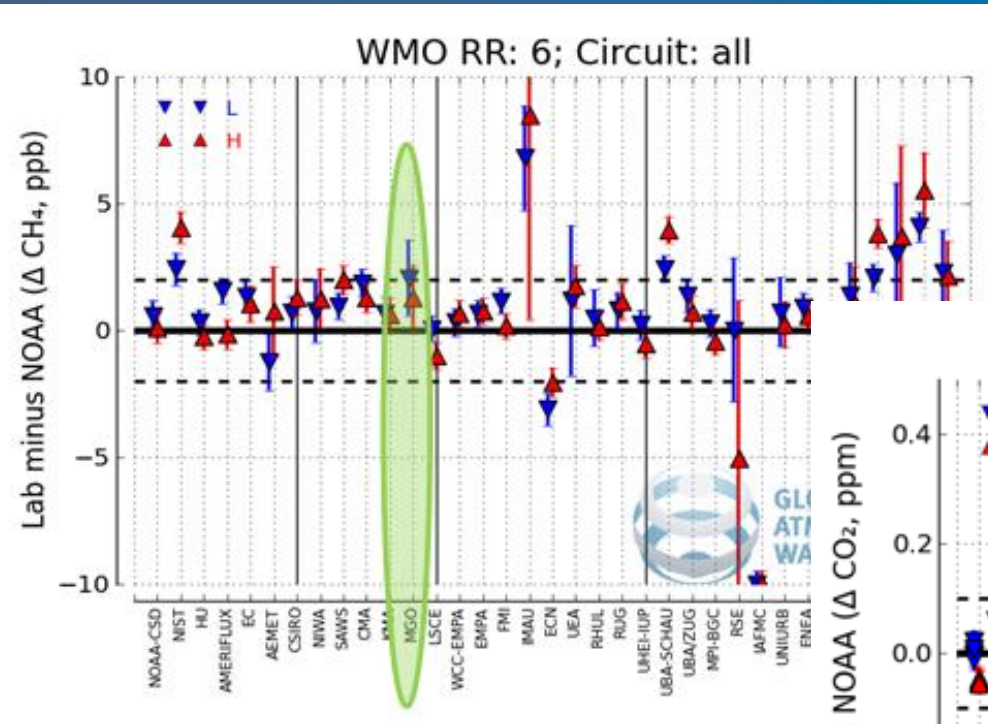
Arctic Regional Climate Centre-Network Coordination Meeting.
St-Petersburg, Russian Federation, February 25-27, 2019

GAW WMO GHG stations in the Arctic

MGO is conducting CO₂ and CH₄ atmospheric concentration observations at three Arctic stations. Monitoring in Teriberka, Noviy Port and Tiksi was started in 1988, 1999 and 2011 respectively.



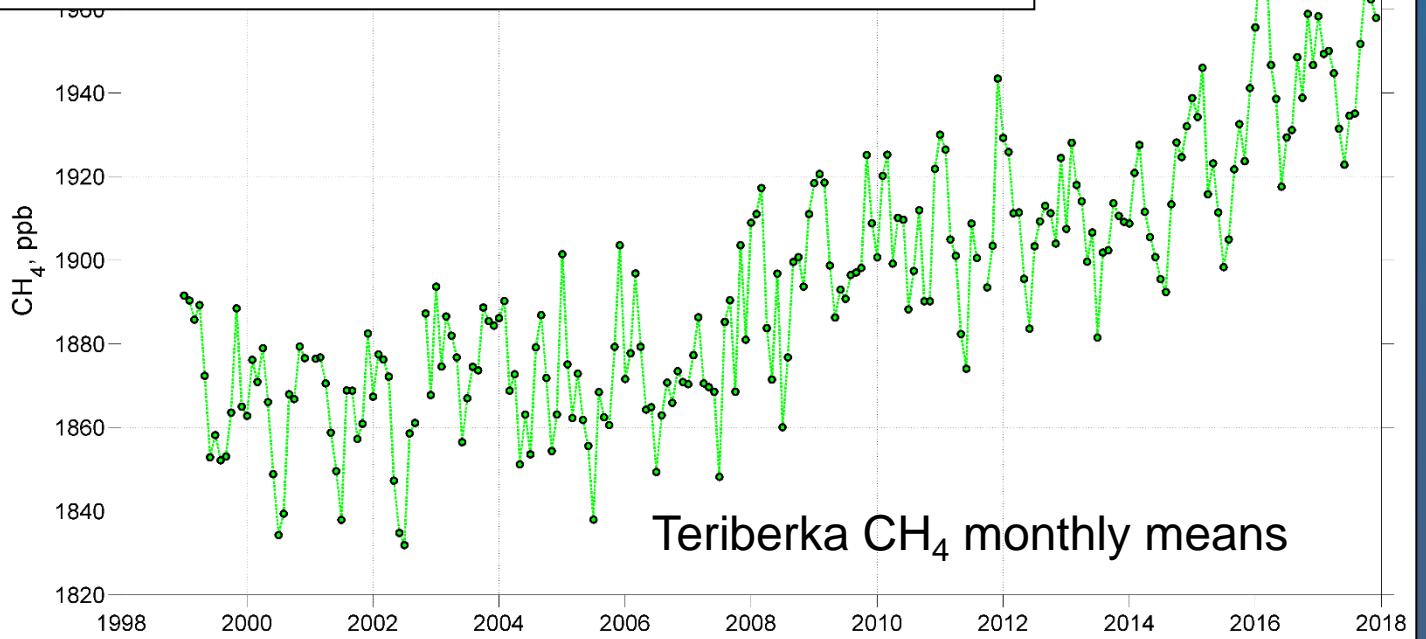
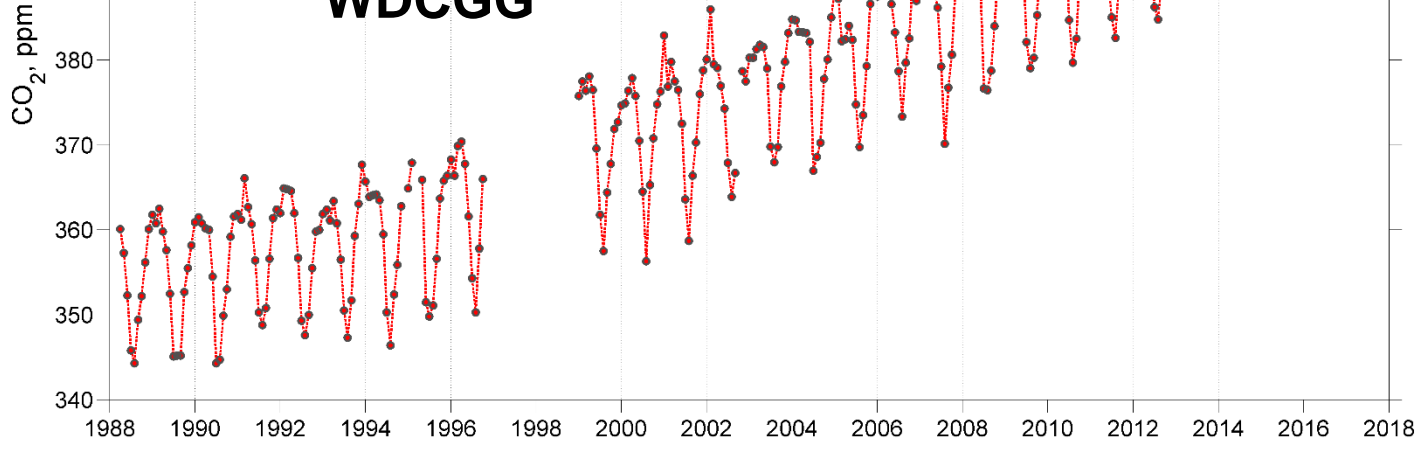
Results of WMO 6 round robin comparison. 2014-2015.



https://www.esrl.noaa.gov/gmd/ccgg/wmorr/wmorr_results.php

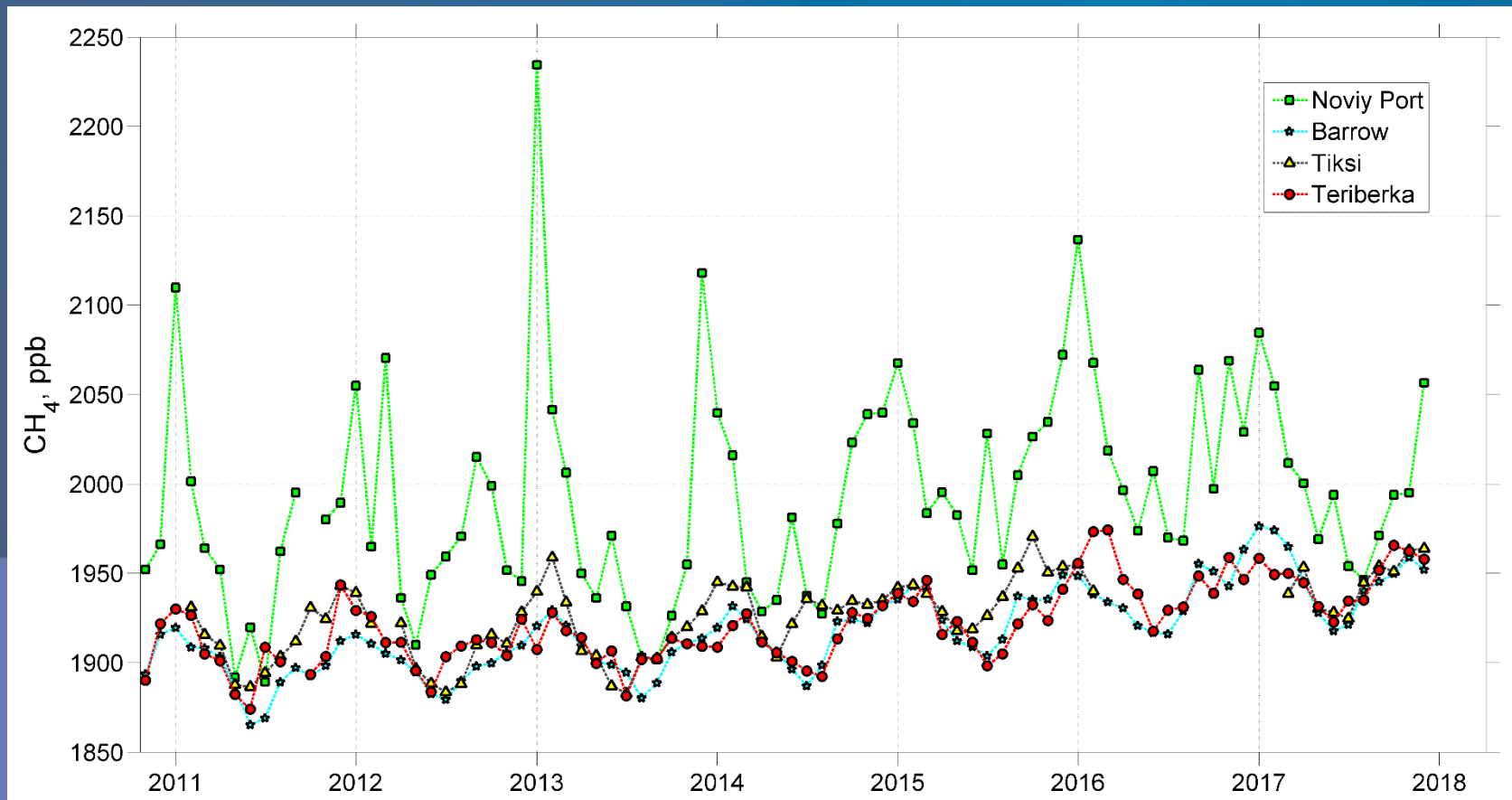
Teriberka CO₂ monthly means

Data are submitted to
WDCGG

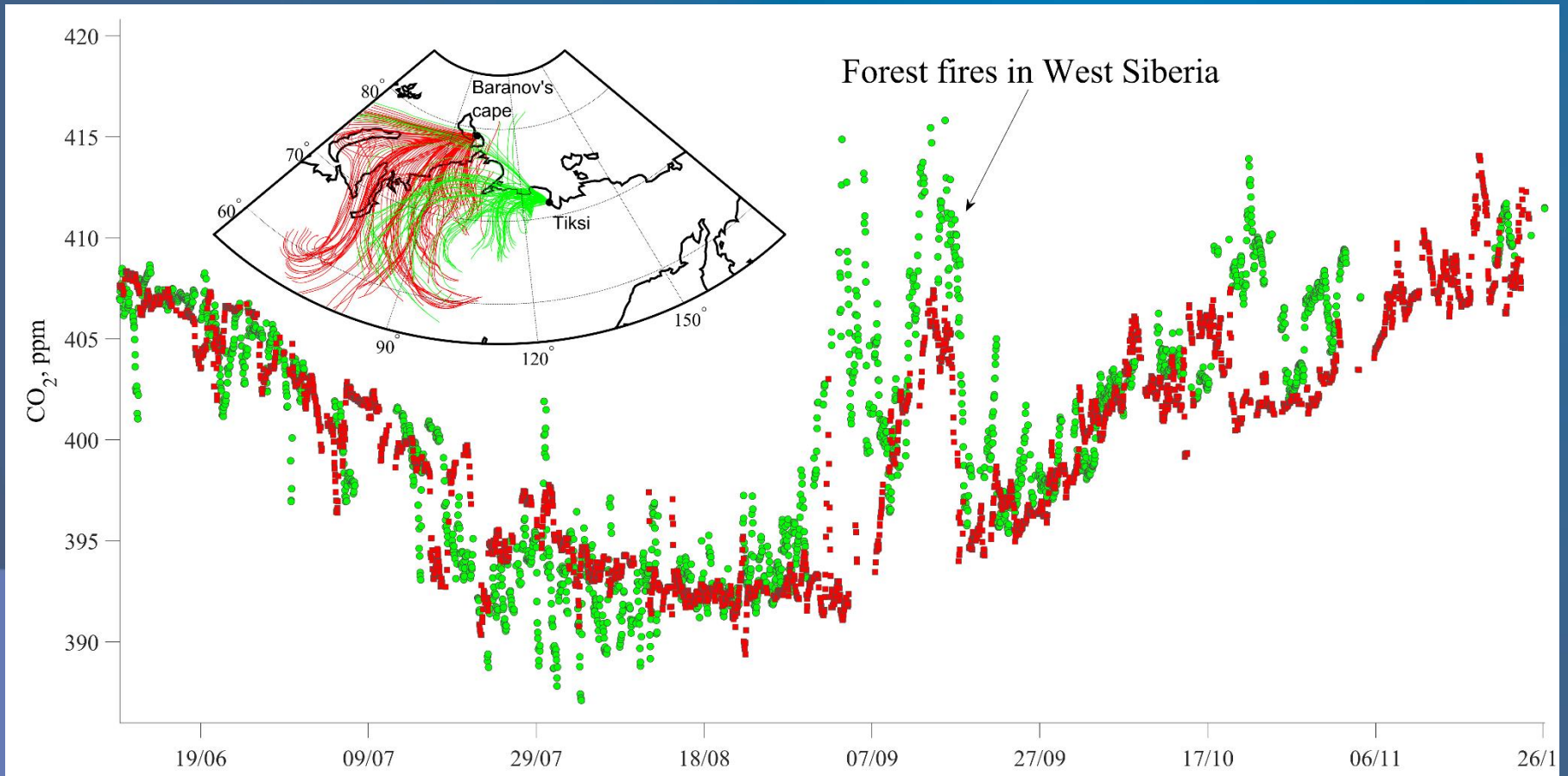


Teriberka CH₄ monthly means

The difference between CH₄ concentration at Noviy Port and the other stations is very likely due to the proximity of gas and oil fields



The influence of forest fires observed in the Arctic. Based on continuous CO₂ measurements at Tiksi and Baranov's cape in September 2016.



Roshidromet Ozone Network



**Number of stations – 28 (red marks- Arctic region);
Instrumentation - filter ozonometer M-124;
Period of measurements - 1973-2019**



Instruments for TO measurements



Filter Ozonometer M124

1973 - c.t.

from Arctic (Heys Island: $80^{\circ}37'N$)
to Antarctic (Vostok: $-78^{\circ}28'S$)

One of **commonly used** ground-based instruments in the ozone network of the WMO GAW Programme

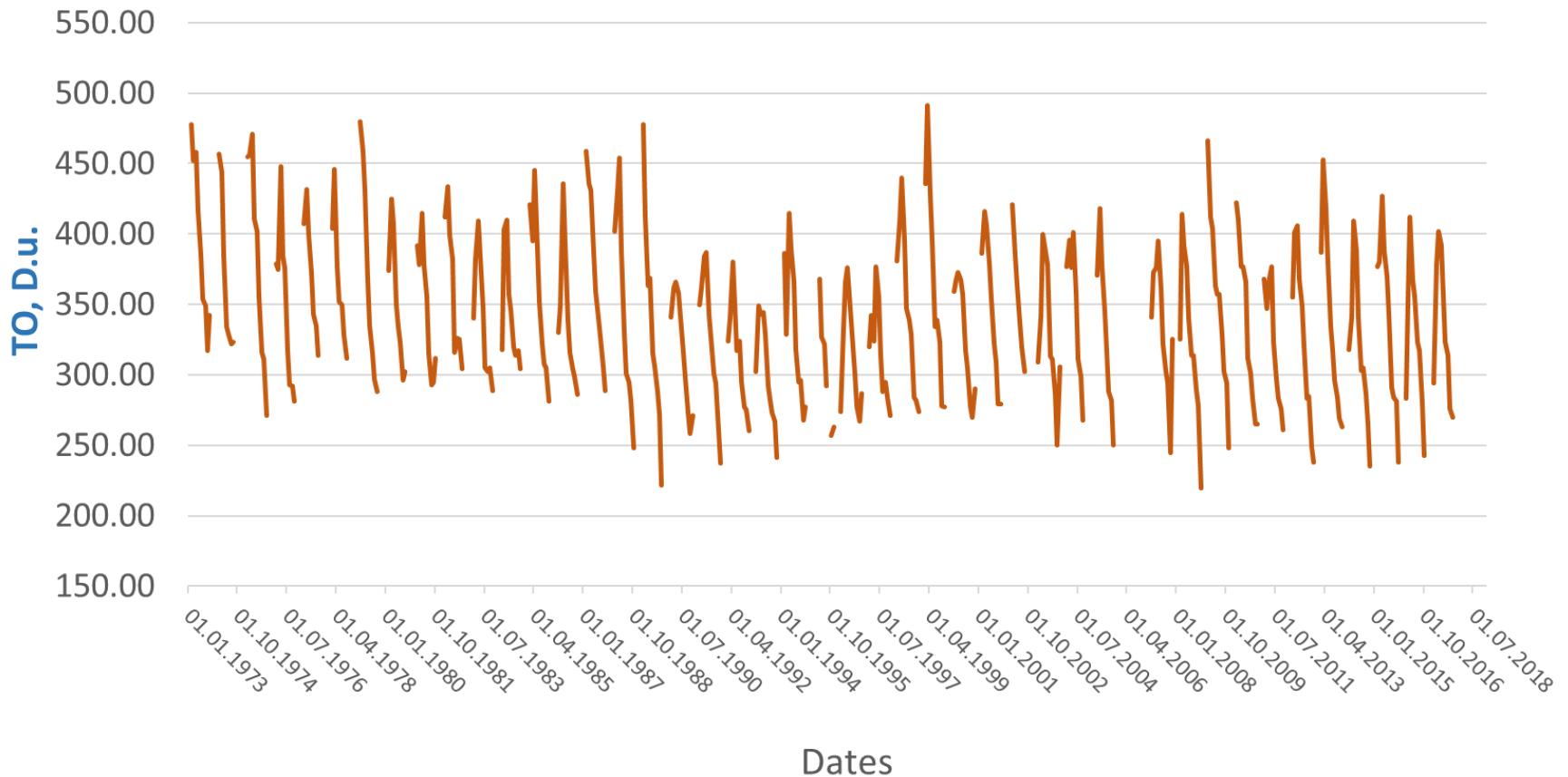
UVOS – Ultraviolet Ozone Spectrometer



2015 – c.t.

Fully **automated** modern device.
Test exploitation

Total Ozone (monthly averaged). Murmansk. 1973-2018



The Arctic region is characterized by maximum shifts in the circulation with the appearance of powerful altitude baric formations, the influence of which on the general circulation of the atmosphere is very large. It is known that the field of TO values is inextricably linked with the pressure field, and this connection is very complex, still poorly understood, and practically not parameterized. At the same time, a competent account of the mechanisms of the effect of ozone on the thermal regime of the stratosphere in prognostic models can help make weather forecasts more accurate.

Main objectives

- Study of the features of variations in the total ozone content and transfer of UV radiation in the atmosphere in the conditions of the Arctic region.
- Evaluation of the influence of atmospheric ozone as one of the small components on the general circulation and climate.



Thank you for attention!