Federal Service for Hydrometeorology
and Environmental Monitoring

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Greenhouse gas observations at HMO Tiksi: Comparison of measurement techniques of NOAA/ESRL, FMI and MGO

(N. Paramonova, A. Reshetnikov, A. Zinchenko, V. Ivakov, V. Privalov, K. Kazakova)

Greenhouse gases measurements at station Tiksi are made by four programs:

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	Measurement program	Method of air samples collection	Height of air samples collection	Measurement method	Calibration
1	Continuous CO_2 and CH_4 concentration measurements, established by FMI		10m	CRDS	CCL standards
2	NOAA/ESRL flask sampling program	flushing and then pressurizing glass flasks with a pump	10m	NDIR for CO_2 GC-FID for CH_4	CCL standards
3	MGO flask sampling program by using NOAA glass flasks (MGO-N)	flushing and then pressurizing glass flasks with a pump	10m	NDIR for CO_2 GC-FID for CH_4	CCL standards
4	MGO flask sampling program by using MGO stainless steel flasks (MGO)	opening a stopcock on an evacuated flask	2m	NDIR for CO_2 GC-FID for CH_4	CCL standards

Clean Air Facility where the Greenhouse gas observations are performed

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Comparison of continuous (FMI) and flask (NOAA, MGO) measurements of CO_2 and CH_4 mixing ratio

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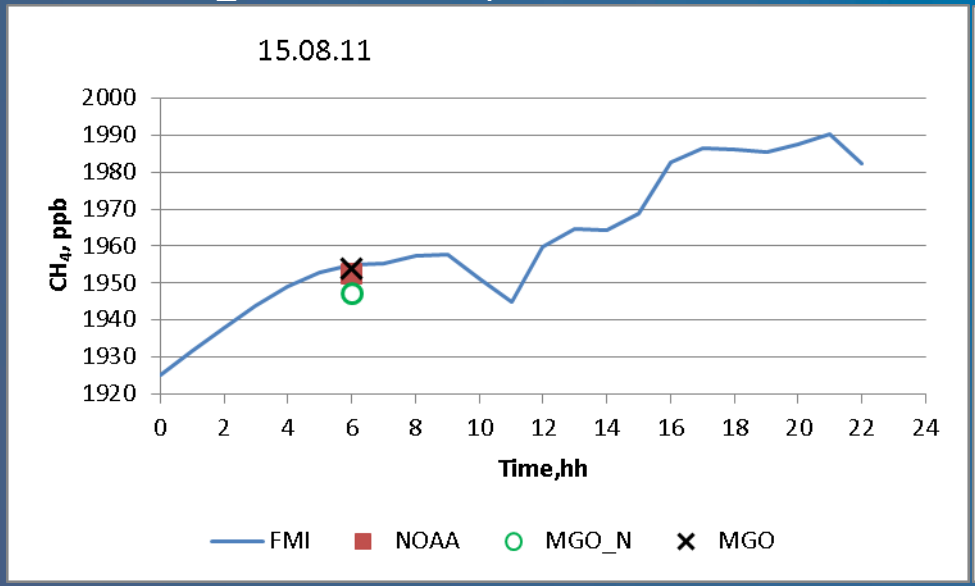

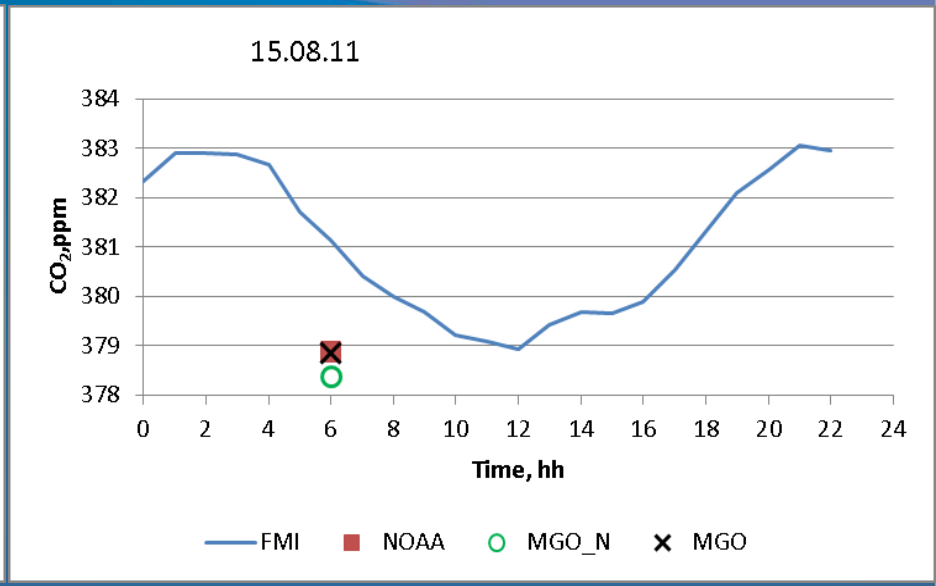

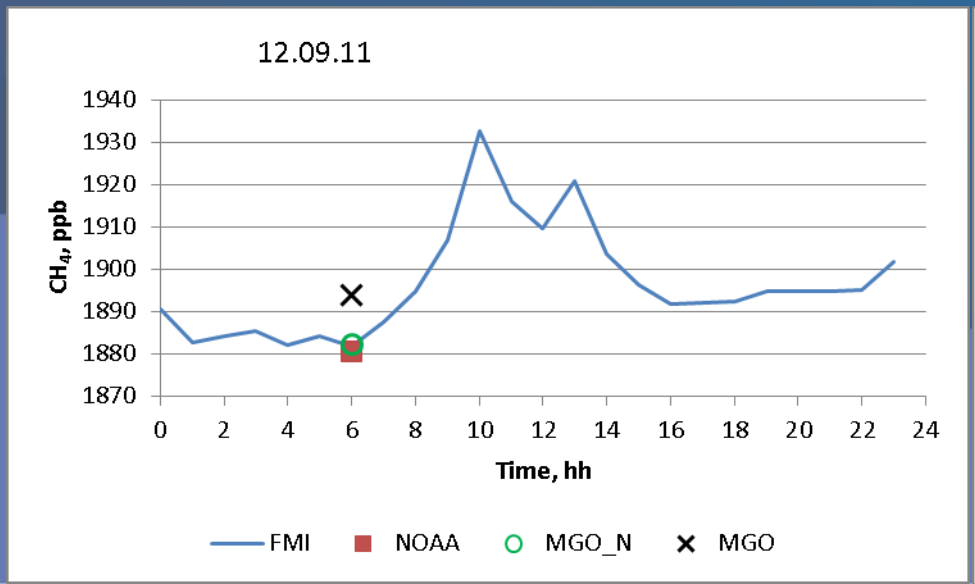

Comparison of continuous (FMI) and flask (MGO) concentration data with available NOAA measurement results

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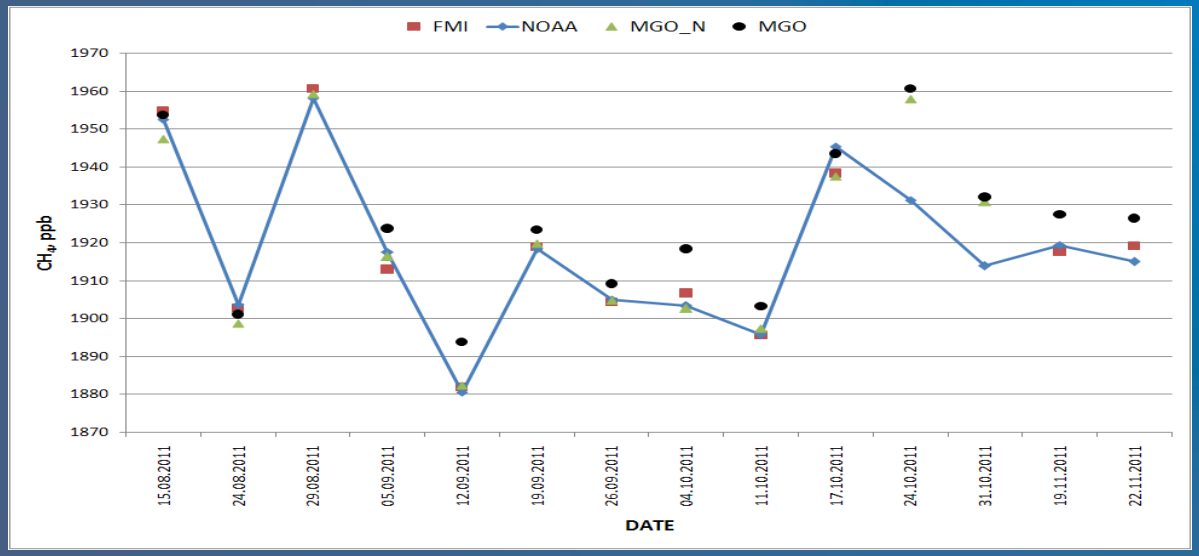
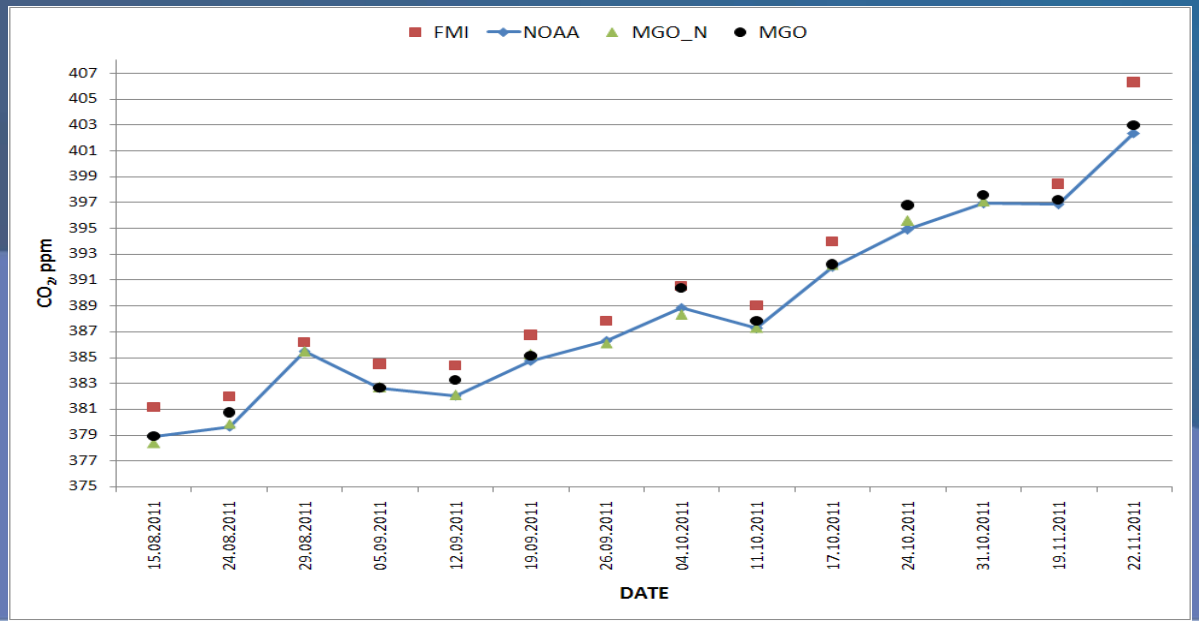


	CH4, ppb	
	AVG	STD
FMI-NOAA	0.3	3.1
MGO-N-NOAA	-1.4	3.4
MGO-NOAA	5.3	6.1
MGO-FMI	-1.2	4.4



	CO2, ppm	
	AVG	STD
FMI-NOAA	1.99	0.77
MGO-N-NOAA	0.04	0.35
MGO-NOAA	0.70	0.60

Deviation of MGO from NOAA measurement results in simultaneously sampled NOAA glass flasks

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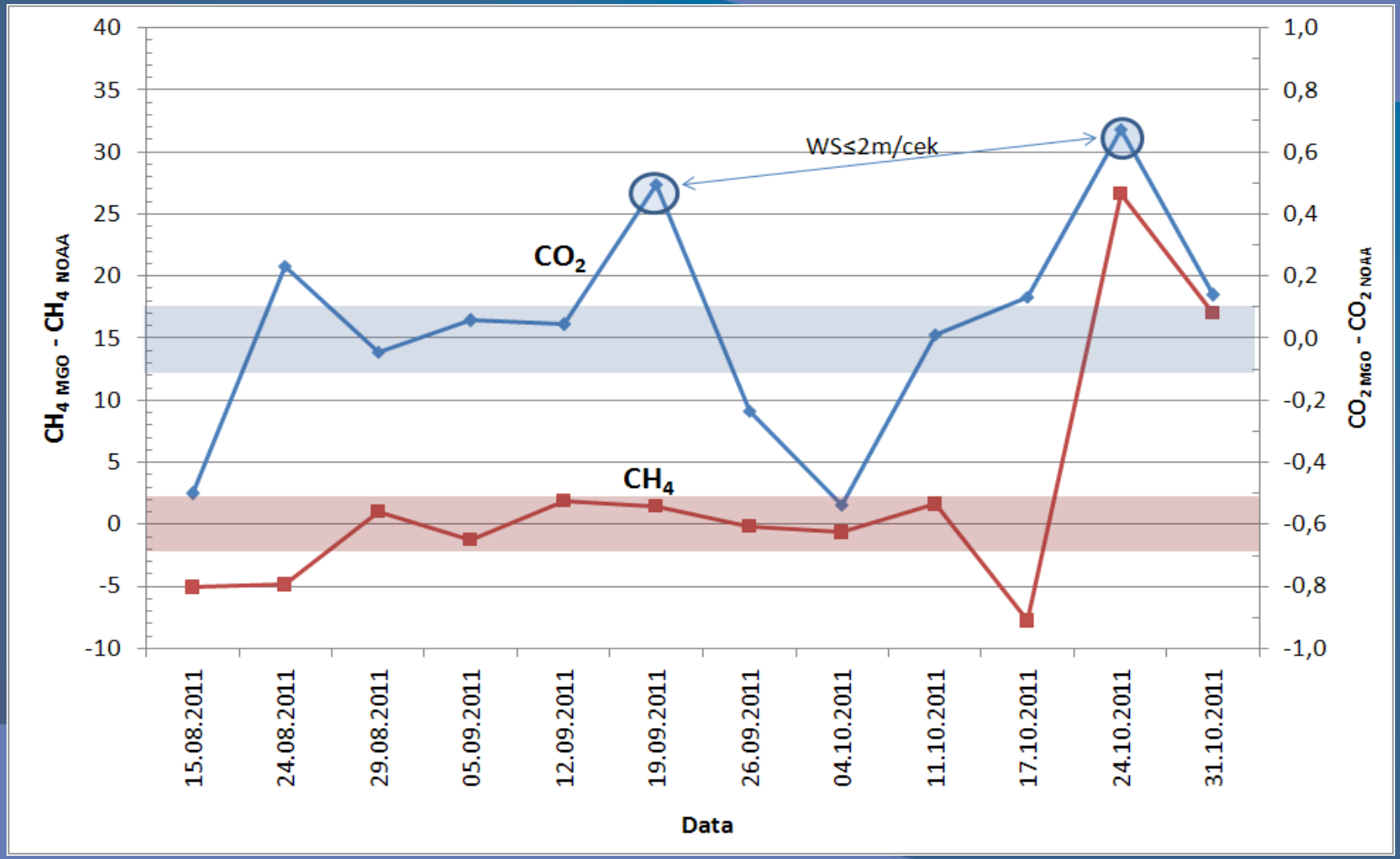

The areas allocated with color correspond to requirements of WMO for comparability of data

CO_2 measurements at Tiksi station

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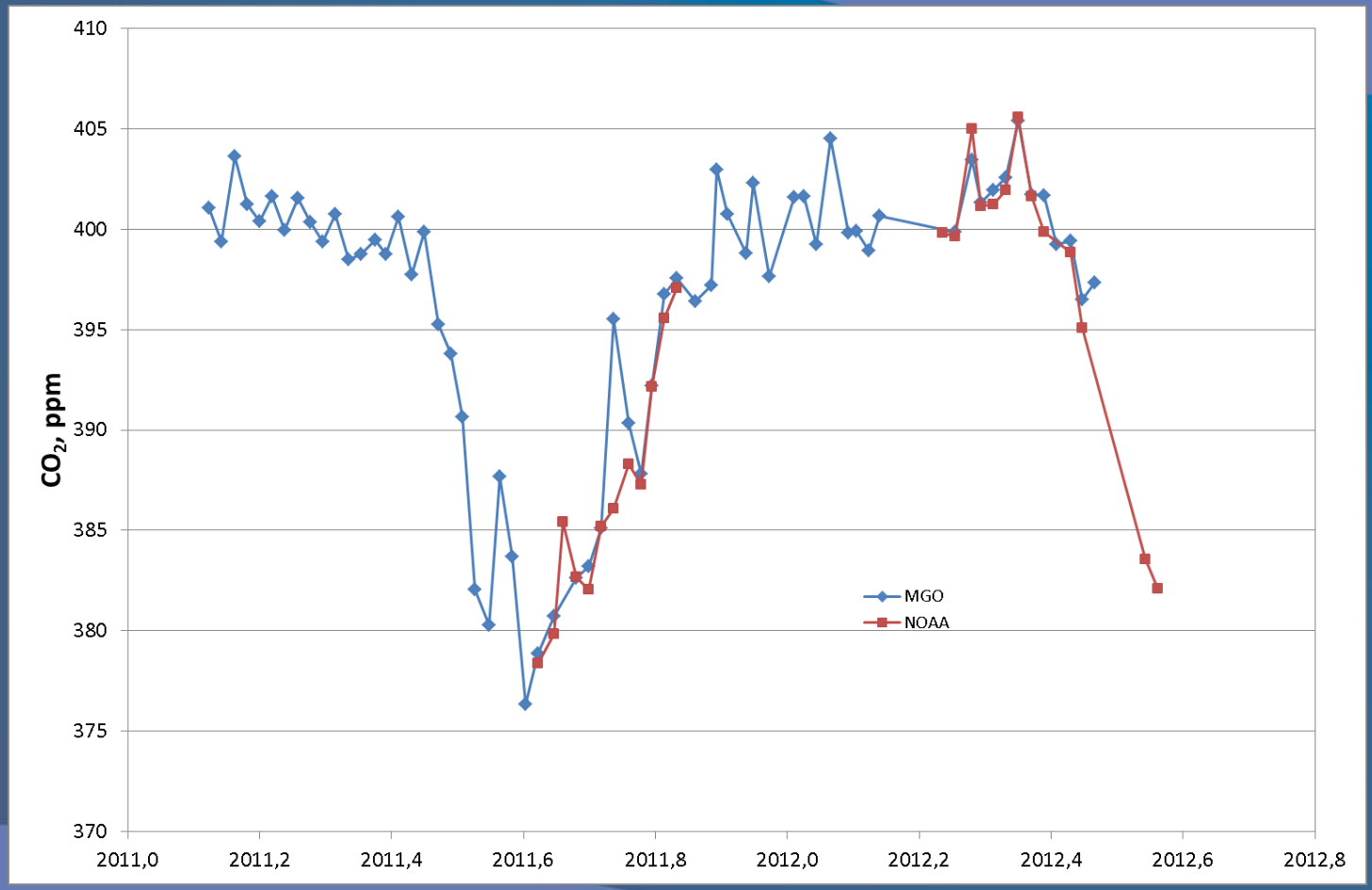

Regular MGO flask sampling started at February 2011
From April 2012 NOAA glass flasks are used on a regular basis

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Thank you for your attention !