

# **WALK-AROUND OBSERVATION**

Chiba Campaign 2020-12-03

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## **This Observation was carried out ...**

- To study spatial distribution of the gases( $\text{CH}_4$ ,  $\text{CO}_2$ , and  $\text{H}_2\text{O}$ ) on a local scale(Vertically and Horizontally).
- To examine and estimate the emissions of the gases.

# Instrument LI-7810 Trace Gas Analyzers

## Gases

CH<sub>4</sub>, CO<sub>2</sub> and H<sub>2</sub>O [concentration]

## Measurement

OF-CRAS

(Optical Feedback – Cavity Enhanced Absorption)

## Features

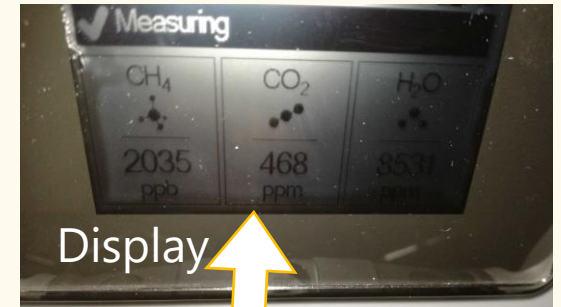
- Precise
- Stable
- Portable
- Low power and Low maintenance

## Temporal Resolution

1 measurement / 1 sec

※More Details See⇒[http://www.meiwafosis.com/products/analyzer/li7810\\_li7815/li7810\\_li7815\\_tokucho.html](http://www.meiwafosis.com/products/analyzer/li7810_li7815/li7810_li7815_tokucho.html)

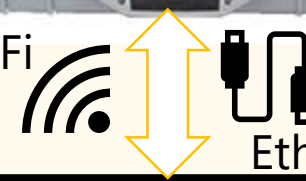
## LI-7810 Instrument Info



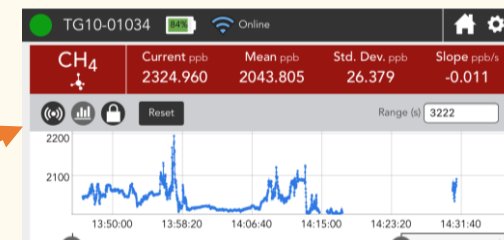
Display



Wi-Fi



Ethernet



# Overview Observation Sites and Info

## Condition(2020-12-03) Chiba Site

- Weather: Cloudy
- Temperature: 9~11 °C
- Relative Humidity: 70~73 %
- Wind Direction: N~E

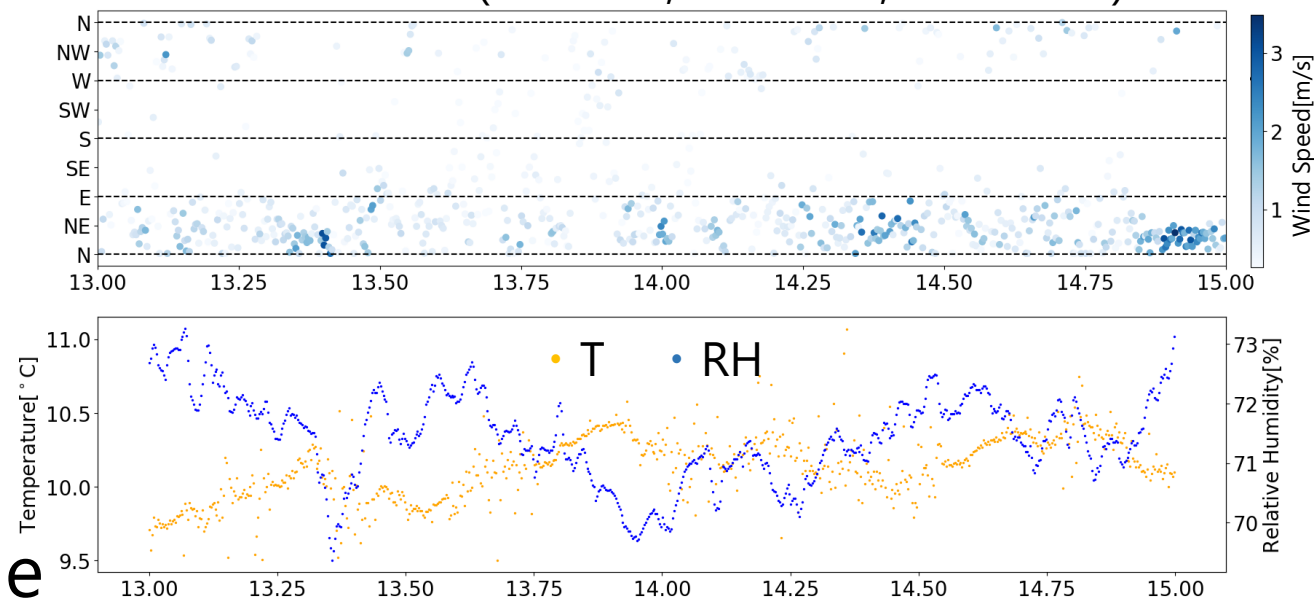
## Site Info

- **South:** Keiyō(京葉) Industrial Zone
- South(14), North(14&16) and East(124): Trunk roads

## Chiba Univ.

- SKYNET site 60 m a.s.l.
- Univ. Ground 21 m a.s.l.

Chiba Site(35.625N, 140.104E, 60 m a.s.l.)



# Details Observation Sites and Info



## Route

Counter-clockwise(Orange line S1⇒S5)

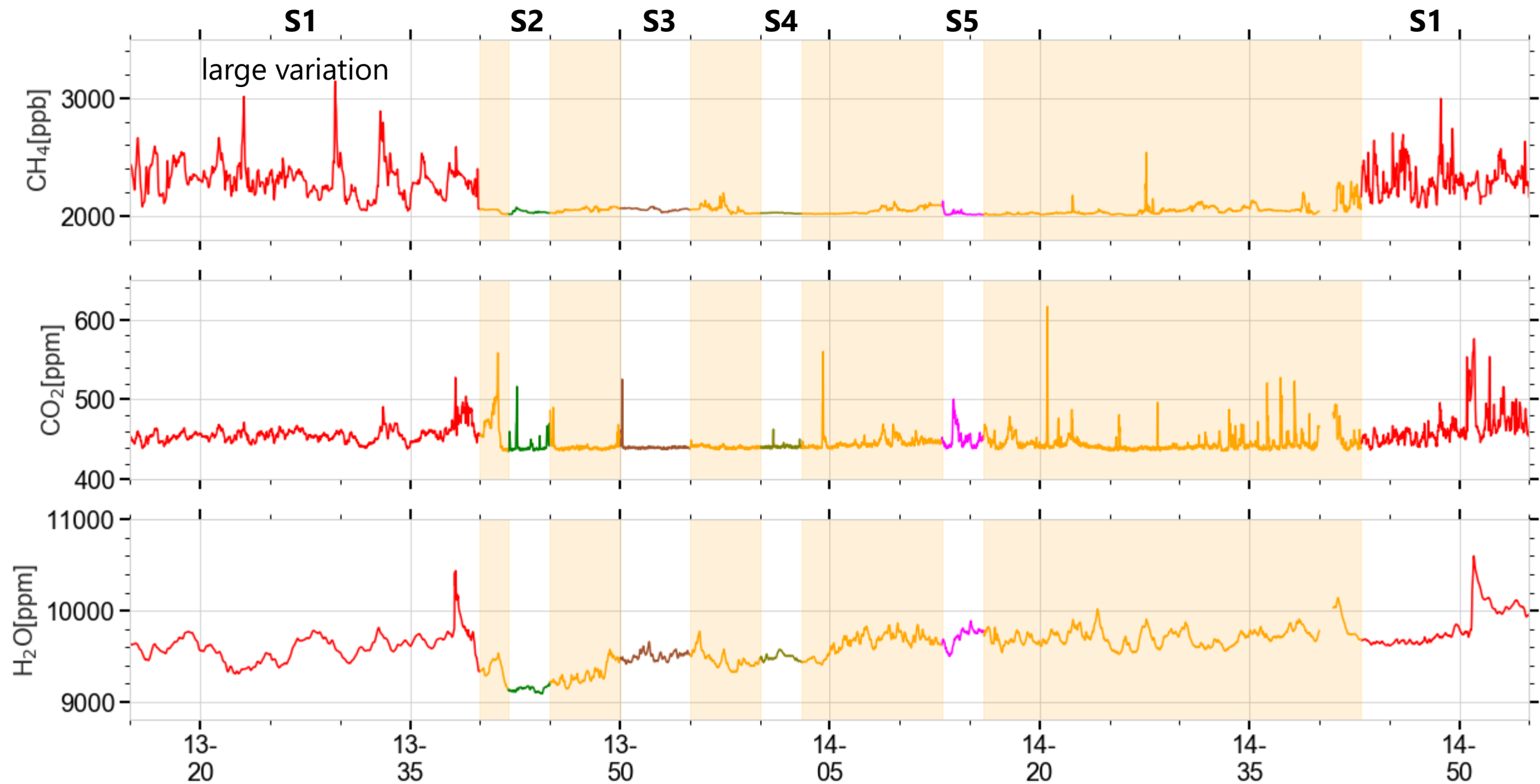
## Time

13:40—14:50

## Sites Info

Site	Name	Description	Time
S1	工学系総合 研究棟1屋上	60 m a.s.l.	~13:40, 14:43~
S2	語らいの森	植生・池	13:50~13:55
S3	有害廃棄物 管理等前	交通量少道路付近	14:00~14:03
S4	道路(敬愛大 正門前)	交通量大	14:13~14:16
S5	S1前	21 m a.s.l.	14:38

# Result



# Findings & Insight

## Findings

### CH<sub>4</sub>

The difference of CH<sub>4</sub> conc. and variability between heights(60 & 21 m)

↑  
60 m: large variation

### CO<sub>2</sub>

Local impact (e.g. near the vehicles not near the roads)

### H<sub>2</sub>O

Low concentration at S2 surrounded by trees

Where is the origin of CH<sub>4</sub> source?

What is the height difference of CH<sub>4</sub> conc. made?

Observation on a Sunny day?

### CH<sub>4</sub> :two hypothesis

Emission from Rooftop?

or

Does it represent a local vertical distribution?

## Methane Budget

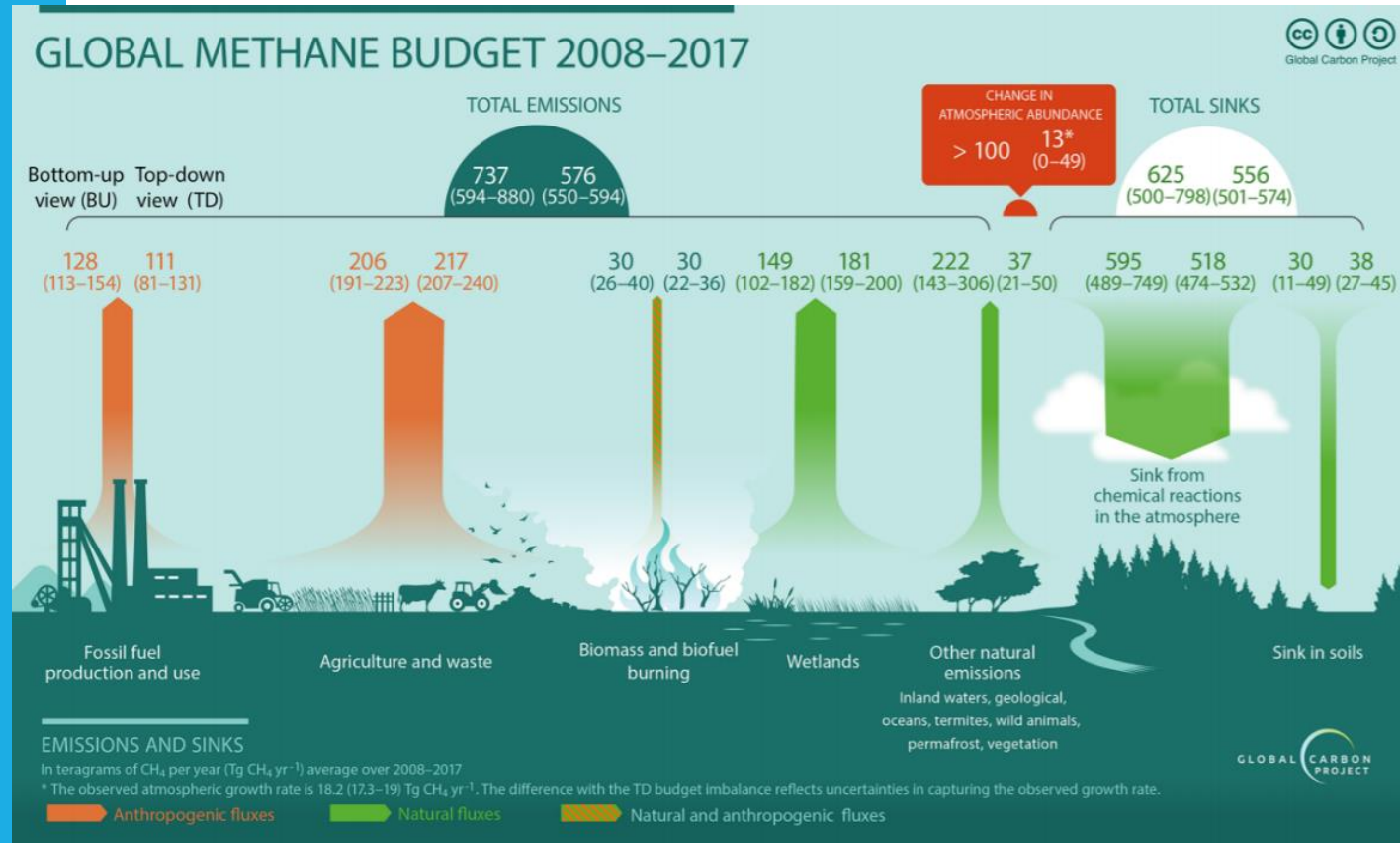
### Emission

#### ◆ anthropogenic origin(60%)

- Agriculture and waste
- Fossil fuel production and use
- biomass and biofuel burning

#### ◆ natural origin(40%)

- wetland
- inland waters, geological, termites, wild animals ...etc



### Sink

#### ◆ chemical reactions in the atmosphere

- oxidation by the hydroxyl radical (OH), (90%)
- tropospheric chlorine
- stratospheric chemistry

#### ◆ Soil uptake