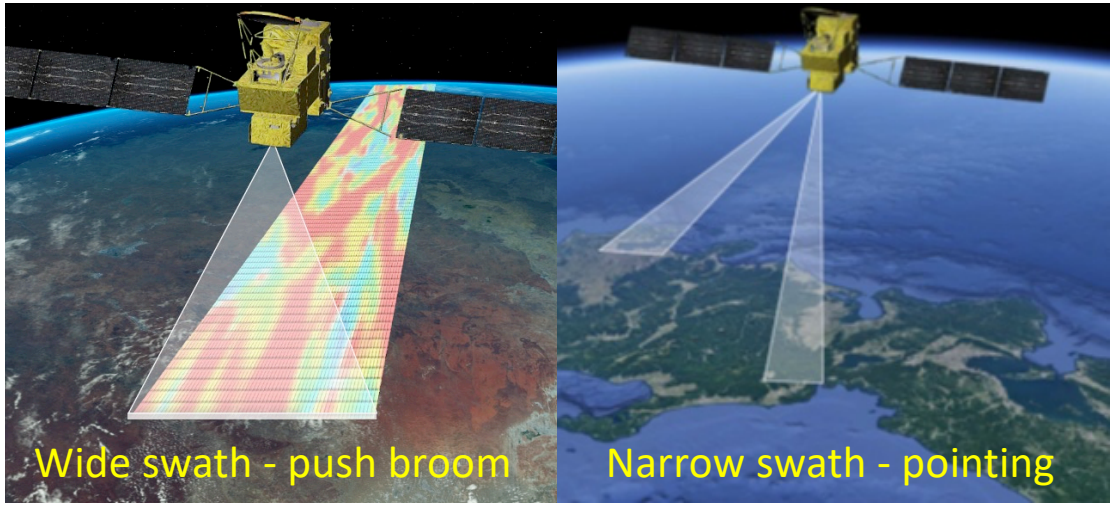
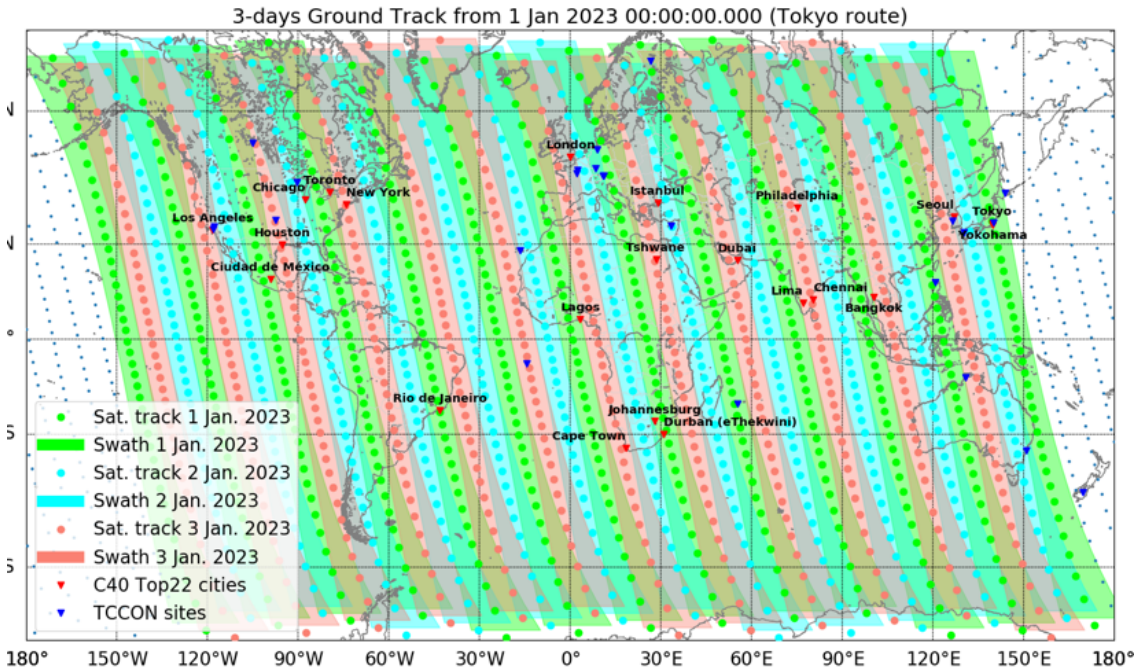
GOSAT-GW (Global Observing SATellite for Greenhouse gases and Water cycle)

TANSO-3 (Total Anthropogenic and Natural emissions mapping SpectrOmeter-3)

Project: NIES, funded by MoE-Japan
Development: JAXA, Mitsubishi
Expected Launch: FY2023 (Apr 2023 – Mar 2024)
Lifetime: 7 yrs
Orbital altitude: 666 km
Sensor: grating imaging spectrometer
Band: VIS, NIR 0.7, SWIR 1.6 um
Species: CO_2, CH_4, NO_2
Swath: 911 km/90 km
Spatial resolution: 10 km/1-3 km
Global coverage: 3 days
Local time: 13:30





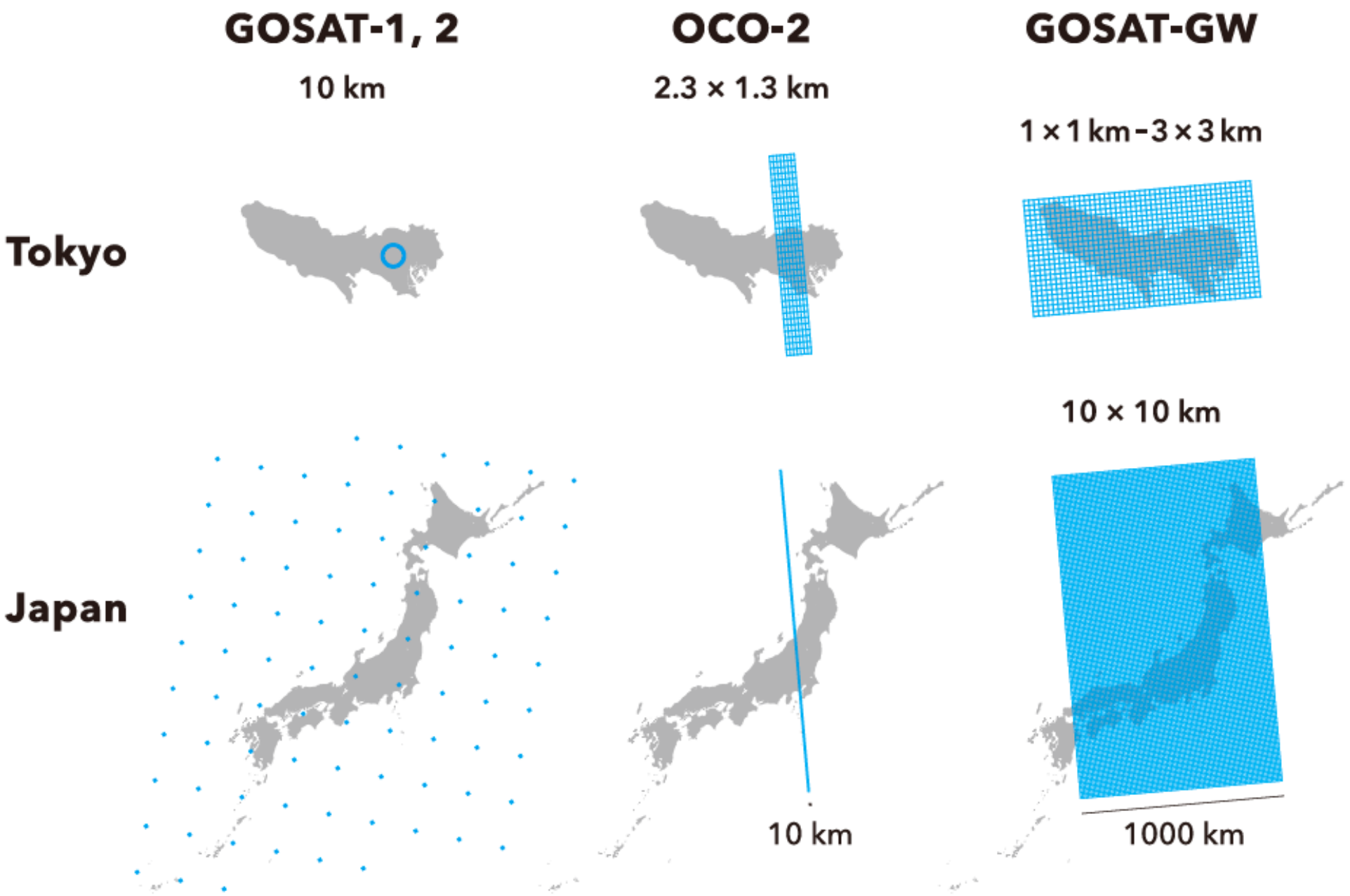
Toward Global Stocktake 2023/2028:

- Monitoring of global-mean atmospheric column of GHGs, on monthly basis
- Evaluation of national inventories of anthropogenic emissions of GHGs
- Identification of large point sources

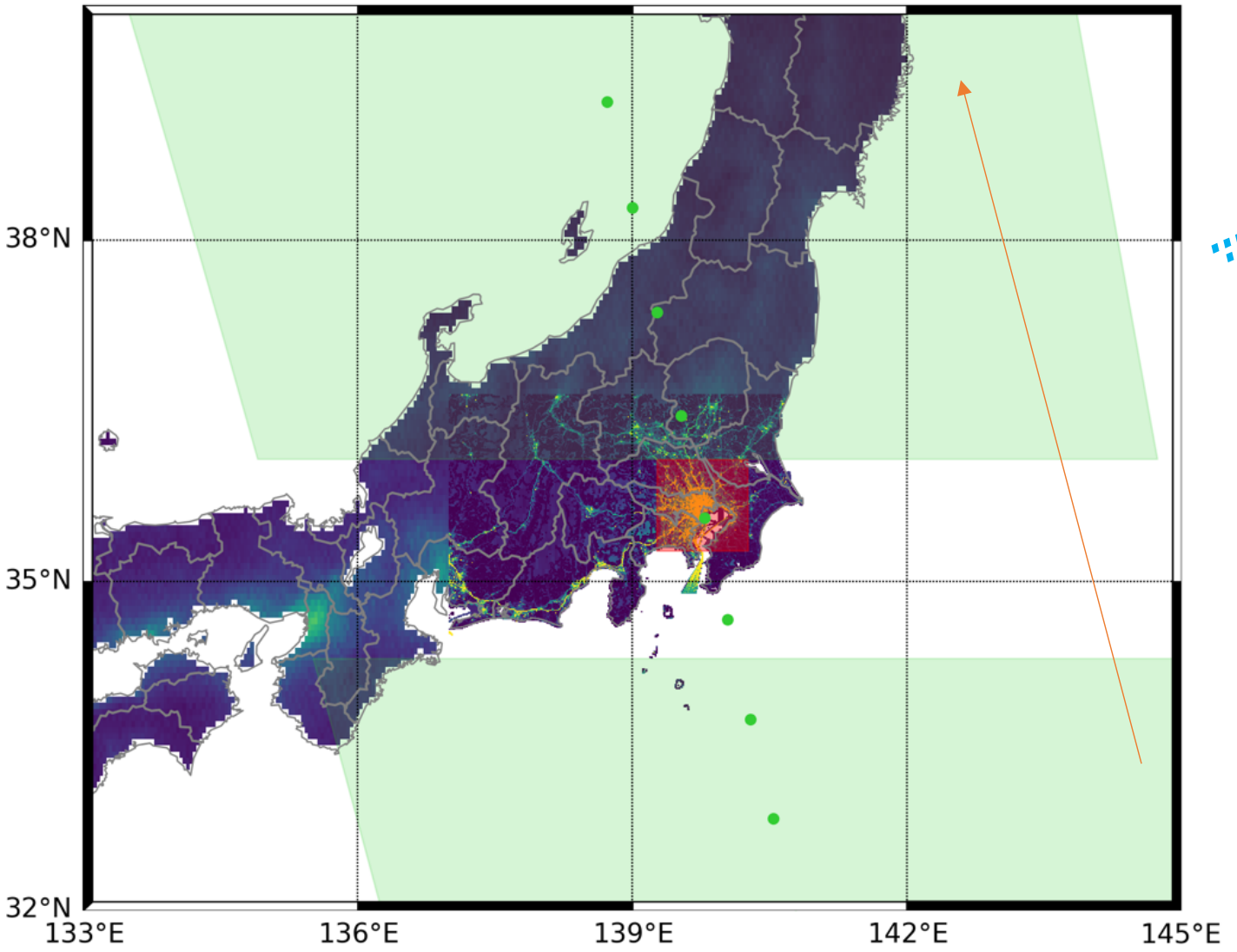
NO_2 Team:

- Joint NIES-JAMSTEC-NICT project (NIES-algorithm, JAMSTEC-validation, NICT-data processing) – H. Tanimoto, Y. Kanaya, Y. Kasai
- NIES-JAMSTEC-JAXA collaboration on aircraft obs., power plants, modeling, etc. – A. Kuze
- NIES's CC-AQ program for 2021-2025

GOSAT-GW (Global Observing SATellite for Greenhouse gases and Water cycle)



GOSAT-GW (Global Observing SATellite for Greenhouse gases and Water cycle)



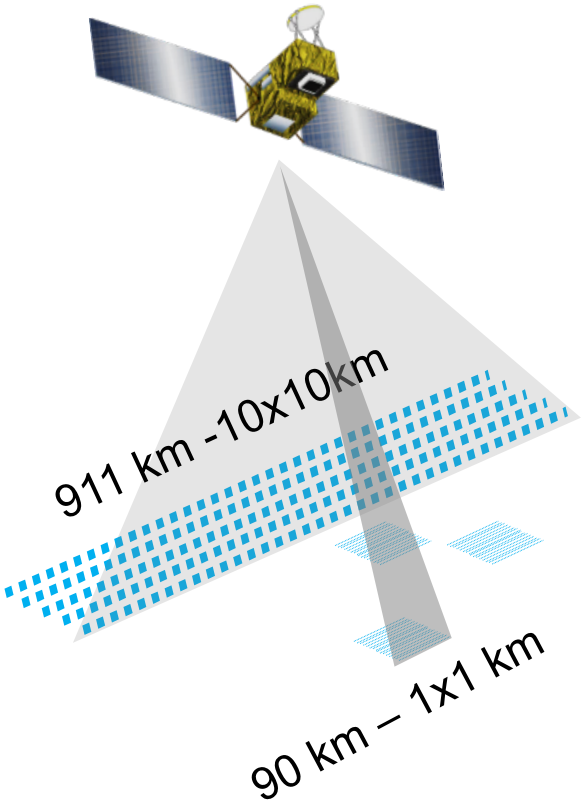
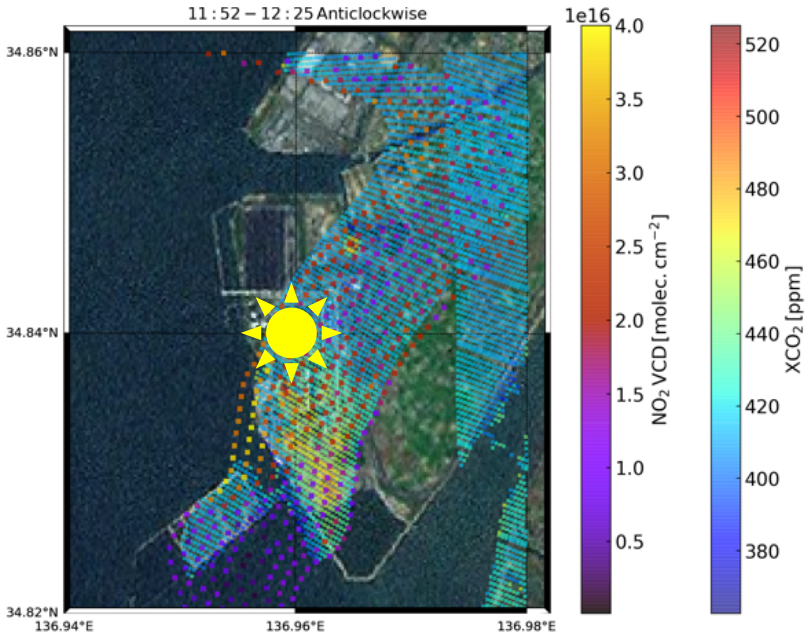


Figure:
Tamaki Fujinawa, NIES

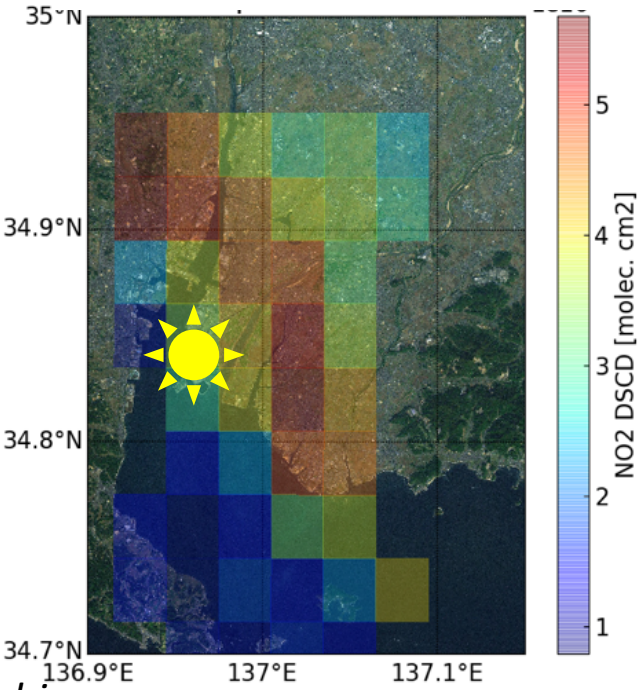
Date	**14 Feb. 13:00-16:30**
	16 10:30-12:30
	20 10:30-13:30
Band	**1) 0.45 µm for NO_2**
	2) 0.76 µm for O_2
	3) 1.6 µm for CO_2/CH_4

Hekinan PP: 24 $MtCO_2$/y, biggest in Japan in 2012

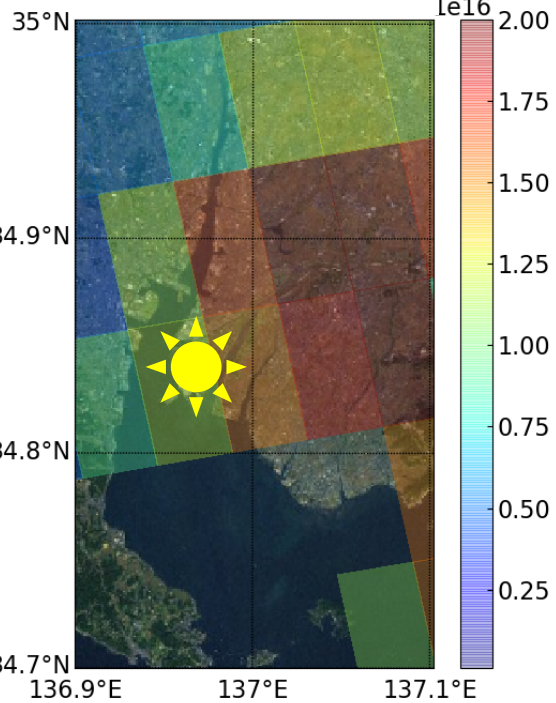
Airborne DOAS – NO_2 & CO_2



Airborne – gridded NO_2

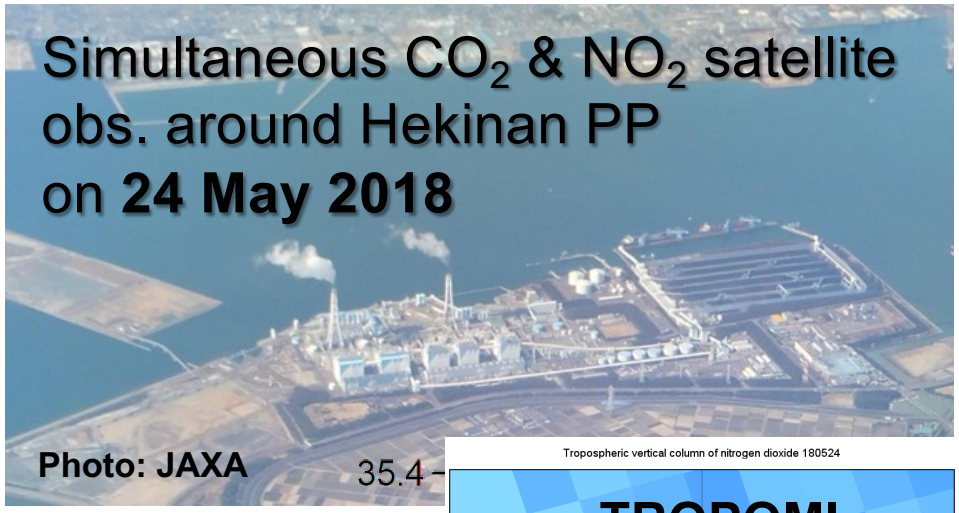


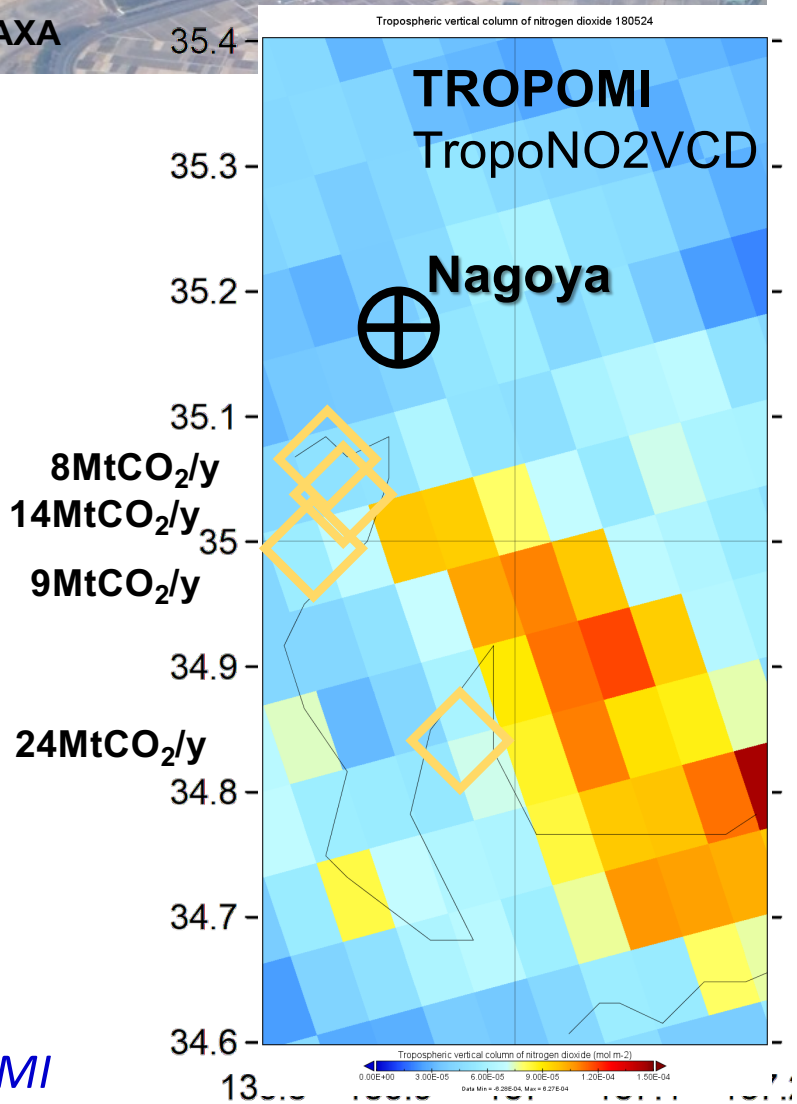
TROPOMI NO_2



Retrieval: Tamaki Fujinawa, Takahiro Kawashima

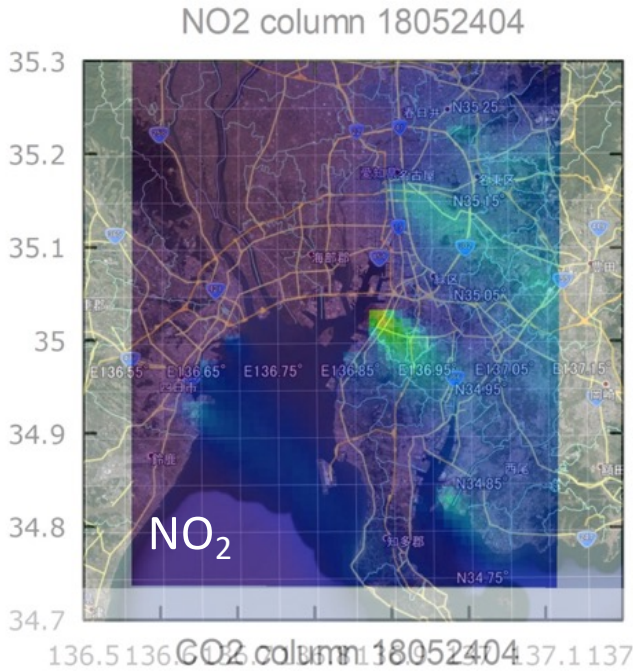
Data: Henk Eskes

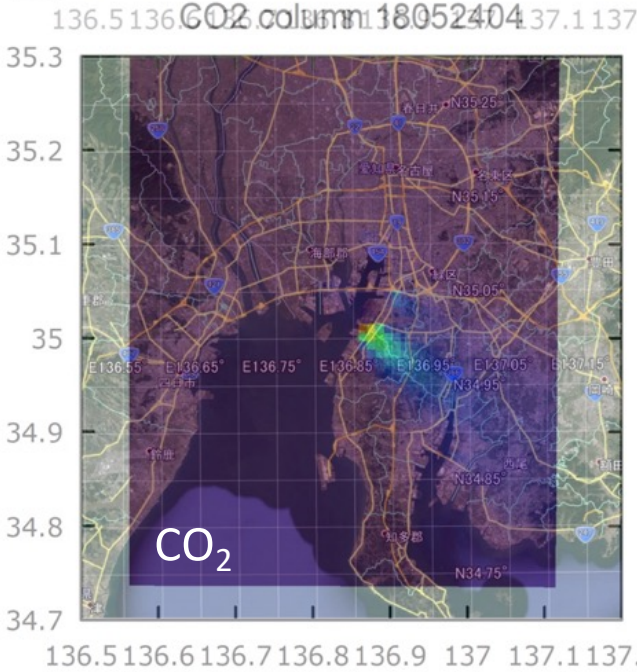




Data credit:
OCO-2 & TROPOMI

Forward CTM simulation on the same day, to evaluate CO_2/NOx emissions





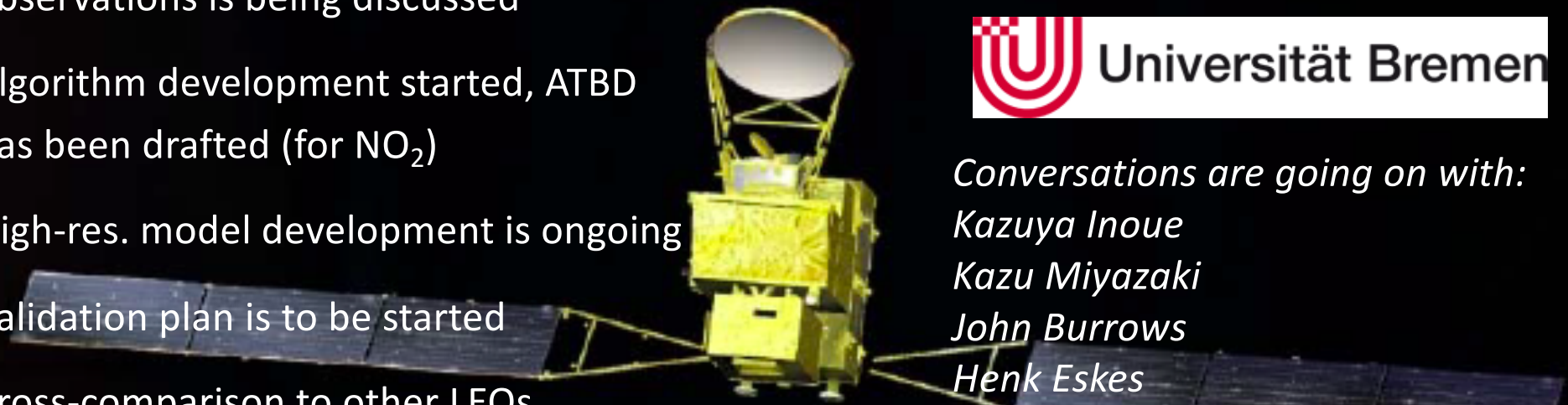
ADMER-PRO (developed by K. Inoue, AIST)

RAMS+CB-IV_99, 1 x 1km mesh (nested from 4x4 km), CO_2: modeled as CO proxy

Run & Draw: Y. Kanaya (JAMSTEC)

Current status, next steps, perspectives, etc

- Mission planning is ongoing, PI TBD
- Science plan is being discussed
- Focus on Tokyo, C40 cities, Asia
- Coordination with surface/aircraft/ship observations is being discussed
- Algorithm development started, ATBD has been drafted (for NO_2)
- High-res. model development is ongoing
- Validation plan is to be started
- Cross-comparison to other LEOs
- Complementary role to GEMS in Asia
- Collaboration with EU, US, Korea/China is very welcome



Conversations are going on with:
Kazuya Inoue
Kazu Miyazaki
John Burrows
Henk Eskes
Pepijn Veefkind
Pieternel Levelt
Andreas Petzold
…

Image credit: Mitsubishi Electric