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
Hekinan PP: 24 MtCO₂/y, biggest in Japan in 2012

Airborne DOAS – NO₂ & CO₂

Retrieval: Tamaki Fujinawa, Takahiro Kawashima

Airborne – gridded NO₂

TROPOMI NO₂

Data: Henk Eskes
Simultaneous CO$_2$ & NO$_2$ satellite obs. around Hekinan PP on 24 May 2018

Forward CTM simulation on the same day, to evaluate CO$_2$/NOx emissions

Data credit: OCO-2 & TROPOMI

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