

Atmospheric Inversion Models

Name of model	TM5-4DVAR
Main references	TM5-4DVAR system: [Meirink et al., 2008] surface inversion: [Bergamaschi et al., 2013] GOSAT inversion: [Alexe et al., 2014]
Meteorological forcing	ECMWF-ERA-INTERIM
Model characteristics	
- Resolution (lon x lat x lev)	6°x 4° x 25 vertical layers
- PBL scheme	[Holtslag and Moeng, 1991]
- Convection scheme	[Tiedke, 1989]
Inversion general set up	
- Time resolution (flux domain)	monthly
- Spatial resolution	grid scale, i.e. 6°x 4°
- Correlation length	500 km
- Minimizer	m1qn3
Prior scenarios	
- Emissions (a list of sources and references)	see [Bergamaschi et al., 2013]
- Sinks (a list of sinks and references)	see [Bergamaschi et al., 2013]
Long inversion	S1-NOAA from [Bergamaschi et al., 2013]; extended until end 2012
• Time window	2000-2012
• In-situ data (indicate networks) and references	NOAA ESRL
Short inversion	similar to S1-GOSAT-SRON-PX [Alexe et al., 2014]; extended until end 2012
• Time window	2010-2012
• Satellite data (indicate instrument) and references	RemoTeC Proxy v1.9/v2.0 [Schepers et al., 2012]
Other details	

References

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Schepers, D., Guerlet, S., Butz, A., Landgraf, J., Frankenberg, C., Hasekamp, O., Blavier, J.-F., Deutscher, N. M., Griffith, D. W. T., Hase, F., Kyro, E., Morino, I., Sherlock, V., Sussmann, R., and Aben, I.: Methane retrievals from Greenhouse Gases Observing Satellite (GOSAT) shortwave infrared

measurements: performance comparison of proxy and physics retrieval algorithms, J. Geophys. Res.-Atmos., 117, D10307, doi:10.1029/2012JD017549, 2012.