

Feasibility study of CO observation from geostationary satellite GOAL

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Satellite observations of Carbon monoxide (CO) have been demonstrated by IMG, MOPITT, SCIAMACHY and AIRS. These observations have been carried out from polar orbiting satellites, which can provide specific local time. And their spatial and temporal coverage are limited. CO is one of the best indices of large-scale air pollution. CO and HCHO are both measurable from space which represent NMHC. NO_x and Hydrocarbons (CO, HCHO, NMHC) produce tropospheric O₃ via photochemical chain reactions, which is well known as photochemical smog as extreme cases. Several CO observation techniques from space have been evaluated for geostationary application (GOAL, Geostationary Observation of Atmospheric chemistry and Lightning proposal), and there was no clear winner. Echelle grating spectrograph, similar to SCIAMACHY, is feasible but it requires size and mass. Gas correlation technique, MOPITT-like, is less feasible when using imaging configuration. Conventional imaging FTS is very large, heavy, and costly. Stationary FTS looks feasible and it will be small and low cost, but further studies will be necessary.