

Progress in Remote Sensing of Carbon Dioxide from Space - The ACOS Project

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The Atmospheric Carbon Dioxide (CO₂) Observations from Space (ACOS) project has been processing Greenhouse-Gases Observing SATellite (GOSAT) data as a test of the algorithms and validation approach developed for NASA's Orbiting Carbon Observatory (OCO-2). Nearly two years of data have been processed and the retrieved X_{CO₂} data products (see example below from April 2010) have been made available through the Goddard Earth Science Data and Information Services Center. These have already been used by a number of groups in assimilation studies to understand the improvements in surface CO₂ flux estimates. The comparison of these new satellite data with ground-based measurements from the Total Column Carbon Observing Network has revealed systematic biases of several parts per million in X_{CO₂}. In efforts to reduce this overall error, the origins of this bias have been traced to sources in instrument calibration, uncertainties in spectroscopy, and the representation of aerosols and clouds. Progress in resolving these will be described with expectations for OCO-2, due for launch in 2013.

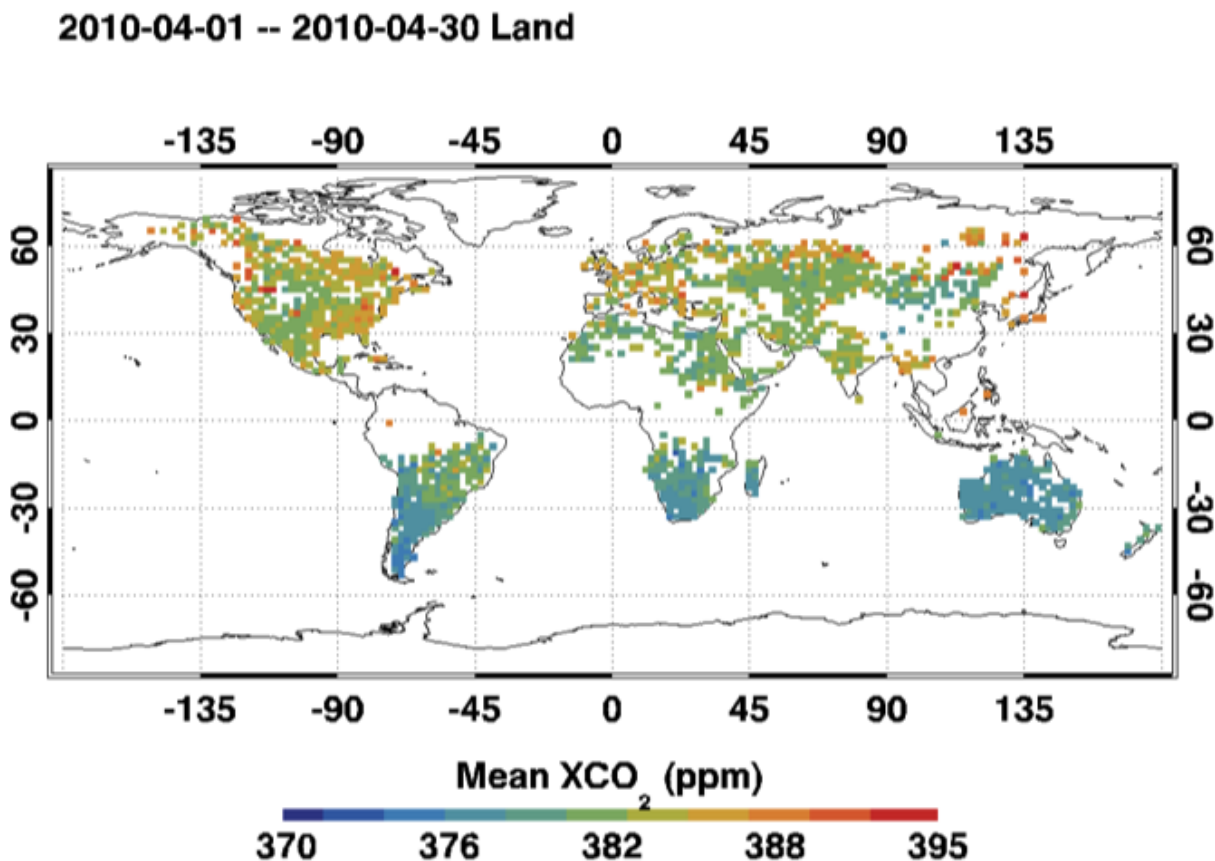


Figure 1. Retrieved X_{CO₂} over land scenes from GOSAT observations during April 2010.