

Objective Verification of Greenhouse Gas Emissions and Removals

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In the near future policies are expected to be enacted to greatly reduce emissions of greenhouse gases, especially of CO₂. Their success should be observable at background sites such as Mauna Loa as a decreasing rate of the CO₂ build up, followed by a subsequent decline. It is very likely that the observed decline will be less, perhaps substantially, than hoped for. Which of these policies are not meeting their objectives? Because of some very long residence times, of CO₂ especially, we cannot afford failure. The challenge is to provide measurements that can quantify emissions on much smaller spatial scales, such as on the state and county level. Experience shows that we cannot rely solely on inventories that are often based on self-reporting. An outline will be given of a data assimilation approach, in which data from quite different sources are brought together in a coherent framework, in order to optimize the contribution from each data type and maximize the reliability of the overall results.

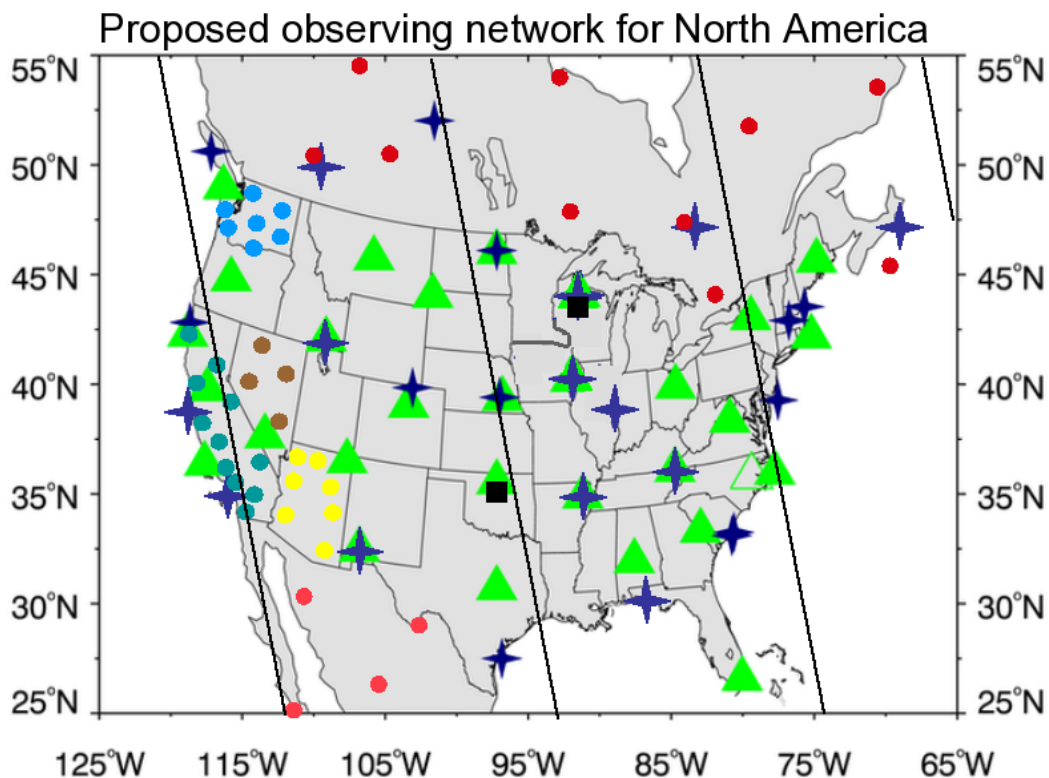


Figure 1. Conceptual design of network. Triangles: tall towers; stars: regular aircraft profiles; circles: regional and national networks; squares: upward looking spectrometers; lines: daily satellite orbits.