Using MISR satellite data to improve air quality models in the PNW

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Project Description

In this project, the student with use a specialized tool (MINX, or MISR Interactive eXplorer) that calculates smoke plume heights from MISR (Multi-angle Imaging spectroradiometer) satellite data to improve the characterization of smoke plume rise from forest fires and agricultural fires in the AIRPACT (wildfire) and CLEARSKY (agricultural fire) regional air quality (AQ) forecast systems.

In order to simulate smoke plume rise in regional forecast models, many assumptions must be made about fire and fuel characteristics and one must rely on very simple models of vertical transport. The uncertainties and gaps in our fire data, and the coarseness of our characterization of plume rise may lead to significant errors in predictions of downwind air quality. The purpose of this project is to assess the simulation of fire smoke plume rise in AIRPACT and CLEARSKY, and to identify key sources of error in these simulations.