NASA’s GEOS-5 model forecasts the evolution of fire pollution plumes in near real-time using information on fire radiative power from MODIS and millions of weather and aerosol observations. On May 10, 2016, the influence of fires across Canada is evident in the AOD analysis (left). GEOS-5 forecasts 3 days earlier (right) correctly predicted the transport of pollution to North Dakota, Montana, and Minnesota, helping to give scientists and air quality managers an early warning.