properties (including AOD and FW). They argue that the difficulty lies in making the most appropriate assumptions about both the surface and atmospheric contributions. Remer et al. (2006) detailed in § 4.3 of their work the strategy, formulation and calibration with the AERONET data, and describe in detail the algorithm to obtain the land aerosol optical depth (AOD). They presented the surface reflectance assumptions in their § 4.4, followed by the retrieval algorithm in § 4.5. From the comparison to AERONET data they demonstrate that their algorithm is quite reliable for AOD and FW data from MODIS Collection 5.

3. SATELLITES AND INSTRUMENTATION

Detailed information on the *Terra* and *Aqua* multinational projects can be obtained at the NASA Web pages[1].

3.1. *Terra spacecraft*

The NASA satellite *Terra*, formerly known as *EOS AM-1*, carries a payload of five sensors that study interactions among Earth's atmosphere, land, oceans, life and radiant energy (heat and light). Each sensor is designed to meet a wide range of science objectives. Two of the instruments were supplied by Canada and Japan. *Terra* is in a 100-minute polar orbit 437 miles above Earth, flying in close formation with the photography satellite *Landsat 7*, which was launched in April 1999. In 2002 *Terra* was joined by a complementary satellite, *Aqua*, formerly known as *EOS PM-1*, that crosses over the equator each orbit at a later time. *Terra* circles Earth from pole to pole in an orbit that descends across the equator at 10:30 AM when cloud cover is minimal and its view of the surface is least obstructed. The orbit is perpendicular to the direction of Earth's spin.

3.2. *Terra sensors*

The sensors on *Terra* do not actively scan the surface like laser beams or microwave pulses do, rather, they work like a camera. Sunlight reflected by Earth, and heat emitted by Earth, pass through the apertures of *Terra*'s sensors. That radiant energy is focused on detectors that are sensitive to selected regions of the electromagnetic spectrum, ranging from visible to infrared light. The information produced by the detectors is transmitted down to Earth and processed by computers into images that people can interpret. *Terra* sends down as much as one terabyte of data per day.

[1] `http://terra.nasa.gov/` and `http://aqua.nasa.gov/`, respectively.

TABLE 1

AQUA AND THE A-TRAIN

Satellite	Launch
Aura	2004 July 15
Aqua	2002 May 4
Terra	1999 December 18

The formation of orbiting satellites is referred to as the *A-Train*, and the launch dates are resented in Table 1. Together, their overlapping radars are providing a more comprehensive picture of weather and climate on global Earth. The *A Train* satellites fly in low polar orbits 438 miles above Earth. They circle Earth 14 times a day. *Aqua* crosses the equator at approximately 1:30 AM and 1:30 PM, local time, about 3 hours behind *Terra*. Due to the narrow field of view of its instruments, it takes about 16 days for *Aqua* to map the entire surface of the planet.

3.3. *Aqua Science Instruments*

Each of the school-bus-sized satellite's six science instruments is designed to monitor a different part of our global plumbing system. The six instruments are:

- Atmospheric Infrared Sounder (AIRS)
- Advanced Microwave Sounding Unit (AMSU-A)
- Humidity Sounder for Brazil (HSB)
- Advanced Microwave Scanning Radiometer for EOS (AMSR-E)
- Moderate-Resolution Imaging Spectroradiometer (MODIS)
- Clouds and the Earth's Radiant Energy System (CERES)

The data obtained by all these instruments is available in a public database supported by NASA.

4. MODIS DATA

The MODIS data was obtained from the NASA public database[2]. The MODIS Aerosol Product monitors the ambient aerosol optical thickness (AOT $\equiv \tau$ in equation 1 above) over the oceans globally and over a portion of the continents.

We extracted MODIS data for the San Pedro Mártir, Baja California, Mexico geographic location,

[2] `http://modis.gsfc.nasa.gov/`.