

Spatial Properties of the Southern San Andreas Fault Derived From B4 Data

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Note: All papers, reports and working documents cited below can be found at www.SanAndreasFault.org/SCEC09084FinalReport.html.

1. Nineteen days were spent mapping in the field at six locations on the southern San Andreas Fault (Red Canyon, Curtis Palms, Biskra Palms, Indio Hills near Emerald Lane, Little Rock and Punchbowl). This was done primarily to verify fault features found using the B4 Lidar data set. The results of one field effort was reported at the 2009 SCEC annual meeting (see paragraph 3 below).

2. In order to better plan field mapping, two low altitude aerial surveys were performed to gain high resolution (GSD ~few cm) of the main trace of the southern SAF along 243 km of its length. This included Lone Pine Canyon a few months after the Sheep Fire which denuded the landscape and rendered many fault landforms visible that had previously been hidden by vegetation. All of his data (5216 images along with navigation information, aircraft lat/long and altitude for each picture) have been placed on the web in the public domain and have also been uploaded to two Picasa Web Albums.

<http://www.sanandreasfault.org/SAFCarrizo24Sep2009.html>

<http://www.sanandreasfault.org/SAFMojave29Dec2009.html>

For flight planning, we wrote a spreadsheet-based planning tool “FlightSim” that was used to optimize the flight configuration as to aircraft speed, altitude, GSD, blurring, sun illumination angle, etc.

3. One paper was published in Seismological Research Letters (currently in press) and one poster was presented at the 2009 SCEC annual meeting.

<http://www.sanandreasfault.org/Results.htm>

4. Approximately 670 fault features (scarps, offset channels, vegetation lineaments, etc) – of which about 140 have not been reported or catalogued before - were identified using B4 and Google Earth imagery. They have been measured and catalogued along two sections of the SAF: Bombay Beach to Desert Hot Springs, and Blue Cut to Palmdale. In each section, six areas were identified for field validation and a total of 19 days were spent in the field performing detailed mapping, a total of 7 km along the main trace (e.g. Lynch et al. 2008; 2009).

5. Two of us (DKL and KWH) participated in the Using EarthScope and B4 LiDAR data to analyze Southern California’s active faults workshop hosted by the OpenTopography at UCSD, Dec 3-4, 2009.

6. One of us (DKL) spent five days in the field in support of two groups doing related research: (1) Prof. Michael Manga (UC Berkeley) with Postdoc Ben Andrews and grad student Max Rudolph studying mud and gas emitted by mud volcanoes and mound springs, and (2) Prof. Rowena Lohman (Cornell) and Dr. Rufus Catchings (USGS) doing a seismic reflection study in the Brawley Seismic Zone relating the 2005 seismic swarm in the Salton Trough (NSF-funded).

7. We discovered a new field of mud pots and mound springs south of the Salton Sea.
<http://www.SanAndreasFault.org/PoeRdMudpotField.jpg>

8. We produced an educational website about the San Andreas Fault and related topics of interest to the public: <http://www.SanAndreasFault.org>