INTRODUCTION

The southern Basin and Range Province, in the region of Sonora, Mexico, is characterized for having North-South striking normal faults with the potential to generate important events. For instance, on May 3, 1887 a Mw 7.4 earthquake occurred at the western edge of the Sierra Madre Occidental, breaking three fault segments of a system of normal faults that extend to the south between the San Bernardino basin and the Sahuaripa basin for nearly 300 km (Suter, 2000).

With the purpose of monitoring the seismic activity of this fault system a regional seismic network (RESNES) was recently deployed. RESNES consists of 9 digital K2 seismic stations with four recording channels, two horizontal that record ground acceleration and two vertical, one for ground acceleration and one for velocity. In the central part of the network there is also one broadband station with a Guralp CMG-DM recorder connected to a CMG-40T sensor. The stations of RESNES are distributed around the segments Pitayacachi, Teras and Otates which ruptured during the 1887 event. The network extends from Agua Prieta, at the border between Arizona and Sonora, to the south for nearly 190 km.

We have recorded and located local events within the network and along other neighboring faults. We present results of a local seismicity study made during the time of operation of the network.

RESULTS

We have recorded and located local events within the network and along other neighboring faults. Most of the earthquakes recorded by RESNES are located along the northern segment of the 1887 rupture, near the Pitayacachi fault, and near the Teras fault in the central segment of the system. In the region of Nogales, northwest of the network, we detected seismic activity that could be related to the Imuris system of normal faults. Earthquakes in the epicentral region of the 1887 earthquake (M 7.4), reported by different catalogs and compiled by Suter (2000), together with the seismicity detected by the seismic network RESNES, indicate that the 1887 rupture reactivated a fault system of about 300 km length along the west margin of the Sierra Madre Occidental. This is consistent with previous results reported by Suter and Contreras (2002).

ACKNOWLEDGMENTS

The RESNES network is sponsored by CONACYT grant G33102-T. We acknowledge the help provided by Miguel Navarro Sánchez and Tito Valdez López during the installation of the network. We also thank Luis Iturrieta and Arturo Pérez-Verti for their participation and technical advice respectively.