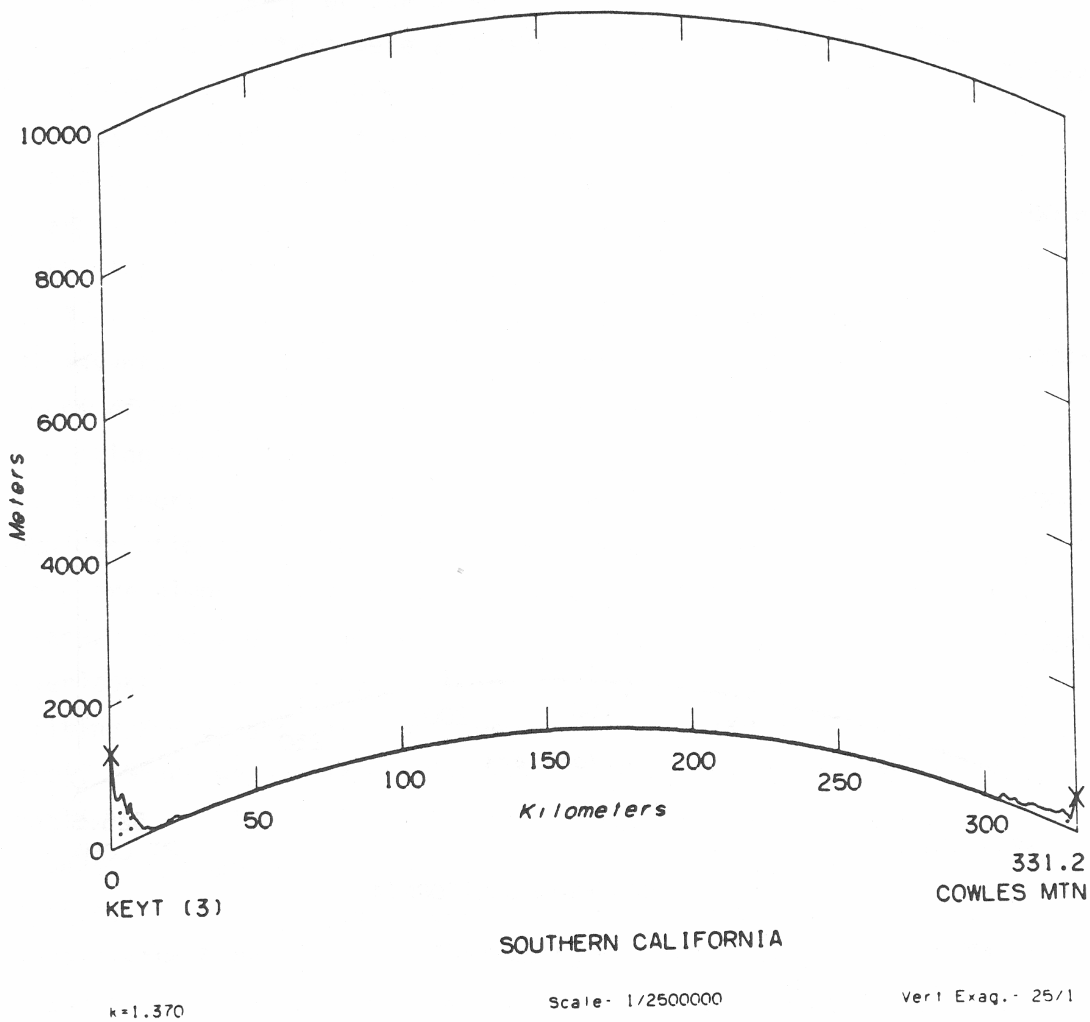

Figure 7. Terrain profile: KEYT(3) to Cowles Mountain.

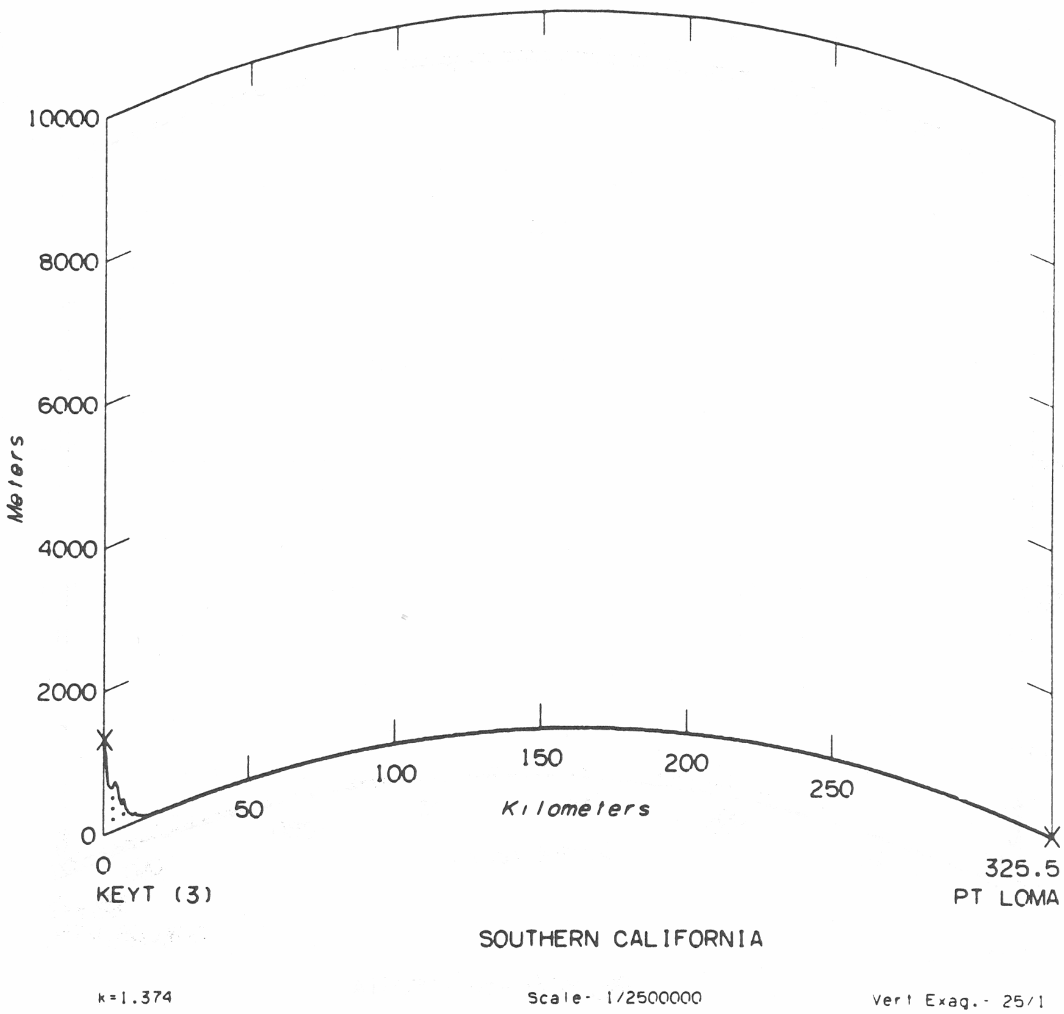

Figure 8. Terrain profile: KEYT(3) to Point Loma.

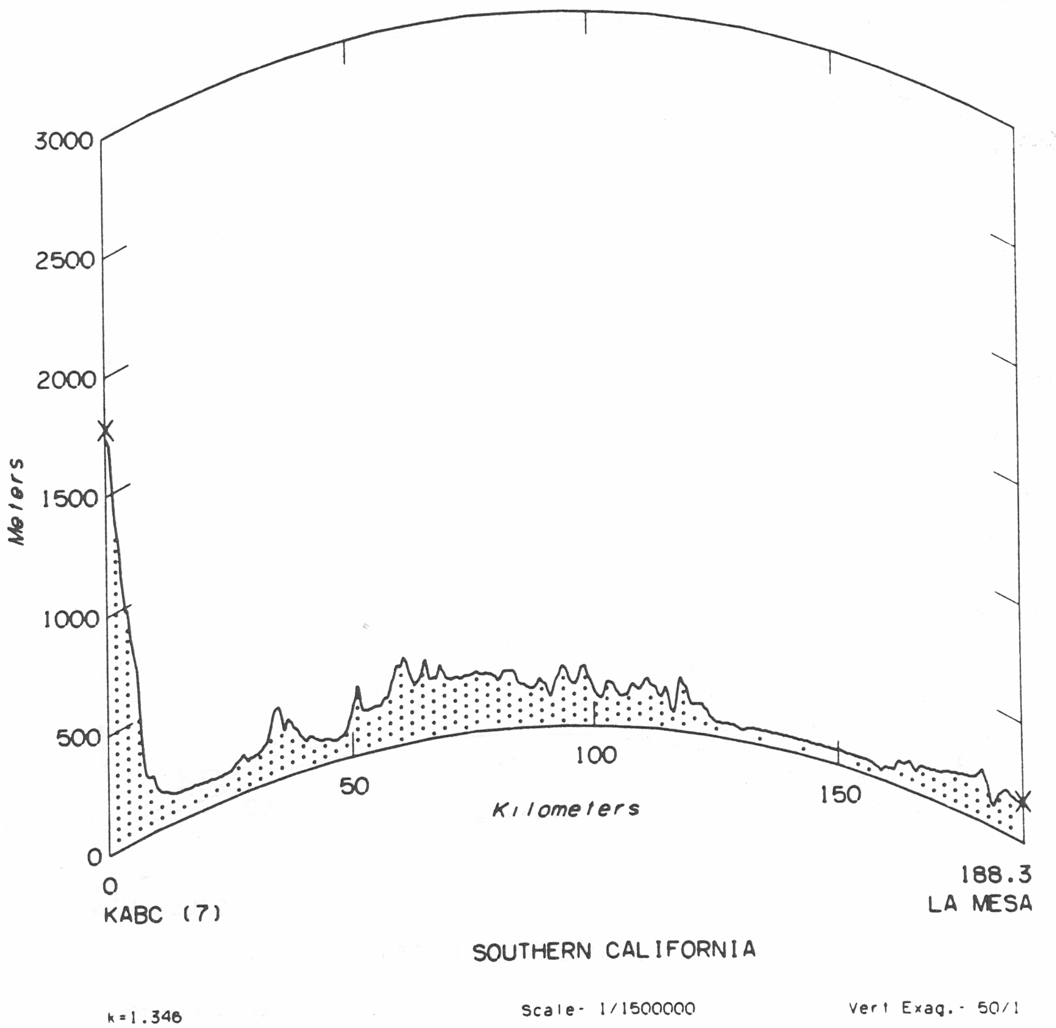

Figure 9. Terrain profile: KABC(7, Mt. Wilson) to La Mesa.

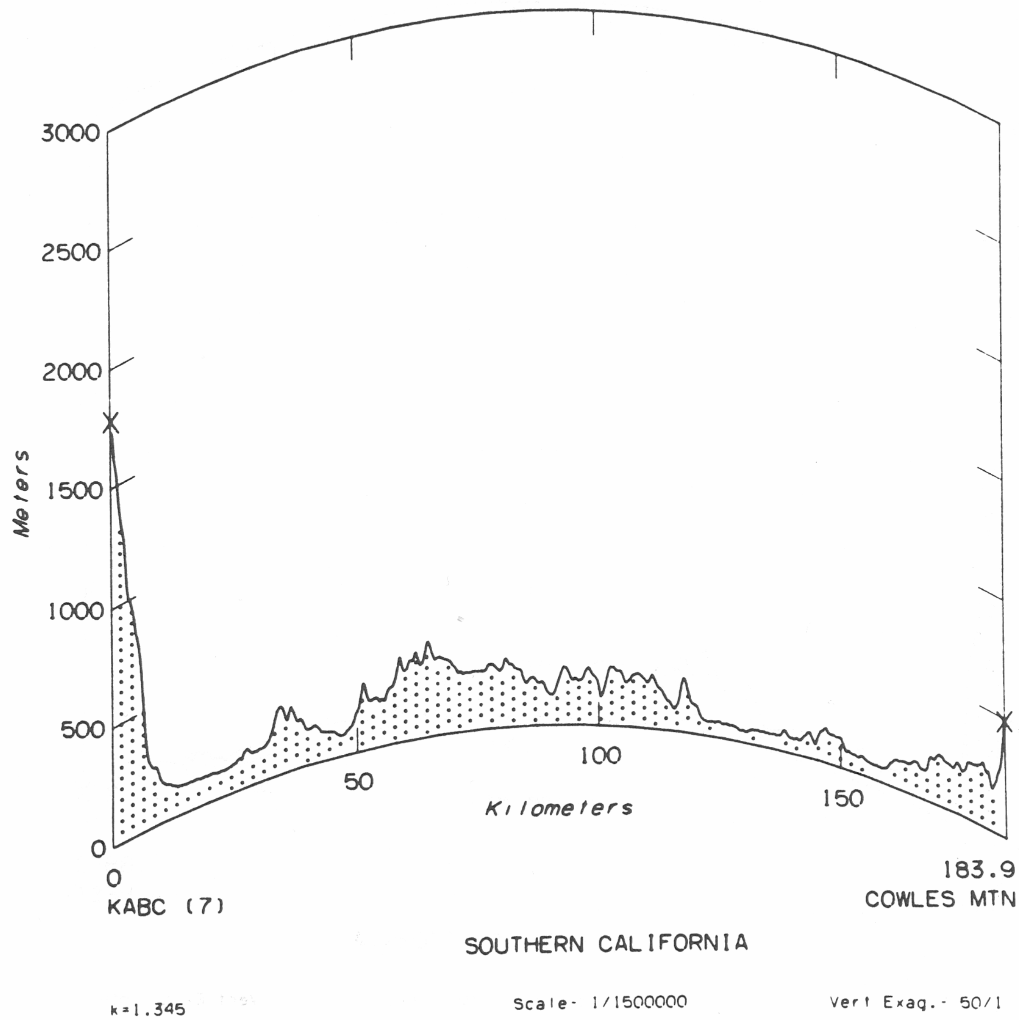

Figure 10. Terrain profile: KABC(7, Mt. Wilson) to Cowles Mountain.

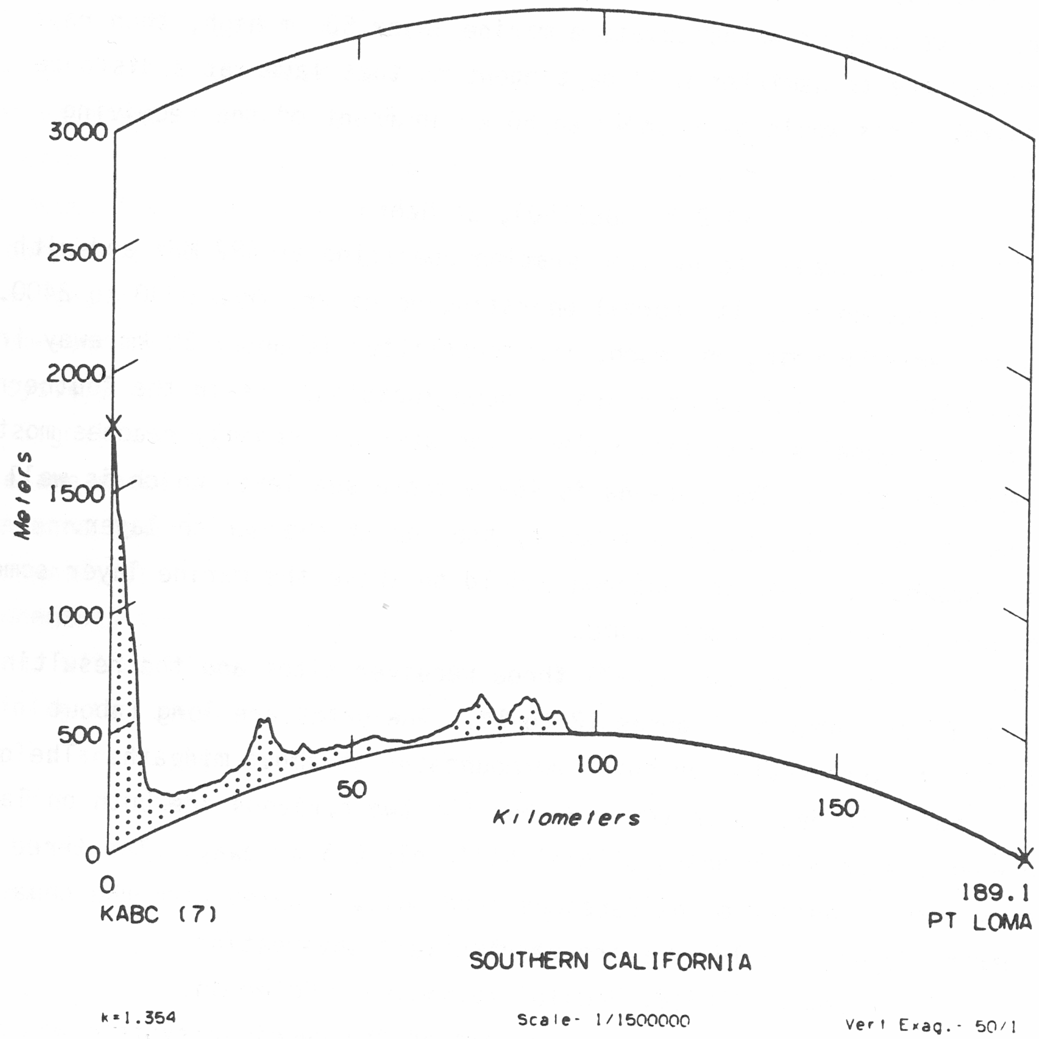

Figure 11. Terrain profile: KABC(7, Mt. Wilson) to Point Loma.

of the high transmitters they are all line-of-sight or nearly line-of-sight paths. The paths to Cowles Mountain are, indeed, line-of-sight. Those to La Mesa are interrupted by a mountain ridge about 9 km in front of the receiver, and those to Point Loma by a local hill only 0.6 km in front of the receiver. Note that if we postulate a marine layer 500 m high, then rays emerging from the transmitter will be tangent to that layer at a distance of about 145 km. This would be from 40 to 50 km in front of the receiving terminals.

3.2.3 KOCE(50), La Habra

KOCE(50) is a public television station operating at 687 MHz and with maximum permitted power. Its normal operating hours are from 0530 to 2400. Although it serves Huntington Beach, its transmitter is about 30 km away in the Puente Hills overlooking La Habra. These locations are in the southern part of the Los Angeles area and, indeed, the station probably reaches most of the communities there. The antenna is 469 m above sea level which is well within the range of elevations assumed by the top of the marine layer. Although somewhat inland, the antenna should be above the marine layer some of the time and within it at other times.

The station was observed at all three receiver sites and the resulting path profiles are shown in Figures 12 to 14. The paths are long (about 155 km) and are interrupted by some low mountains at about midpath. The path to Point Loma is largely over the sea, but the two horizons are both on land, the one near the receiver being a local hill only 0.5 km away. The three paths show quite a number of differences, and this, coupled with the behavior of the marine layer, should make the results very interesting.

3.2.4. KTCS(8, Pueblo) to Boulder, Colorado

This is the path that resulted when one of the receiver systems was moved to Colorado. The radio climate in this new location is greatly different. In Colorado the air is thin and dry and super-refractive layers are a rarity.

The receiver was in an ITS laboratory in a one-story wing of a building near the southern edge of Boulder. The transmitter is a VHF television station (181 MHz) operating at maximum permitted power. It is a public television station with normal operating hours from 0600 to 2300. Unfortunately, in the summer it goes to a reduced schedule and is on the air only from 1400 to 2300.

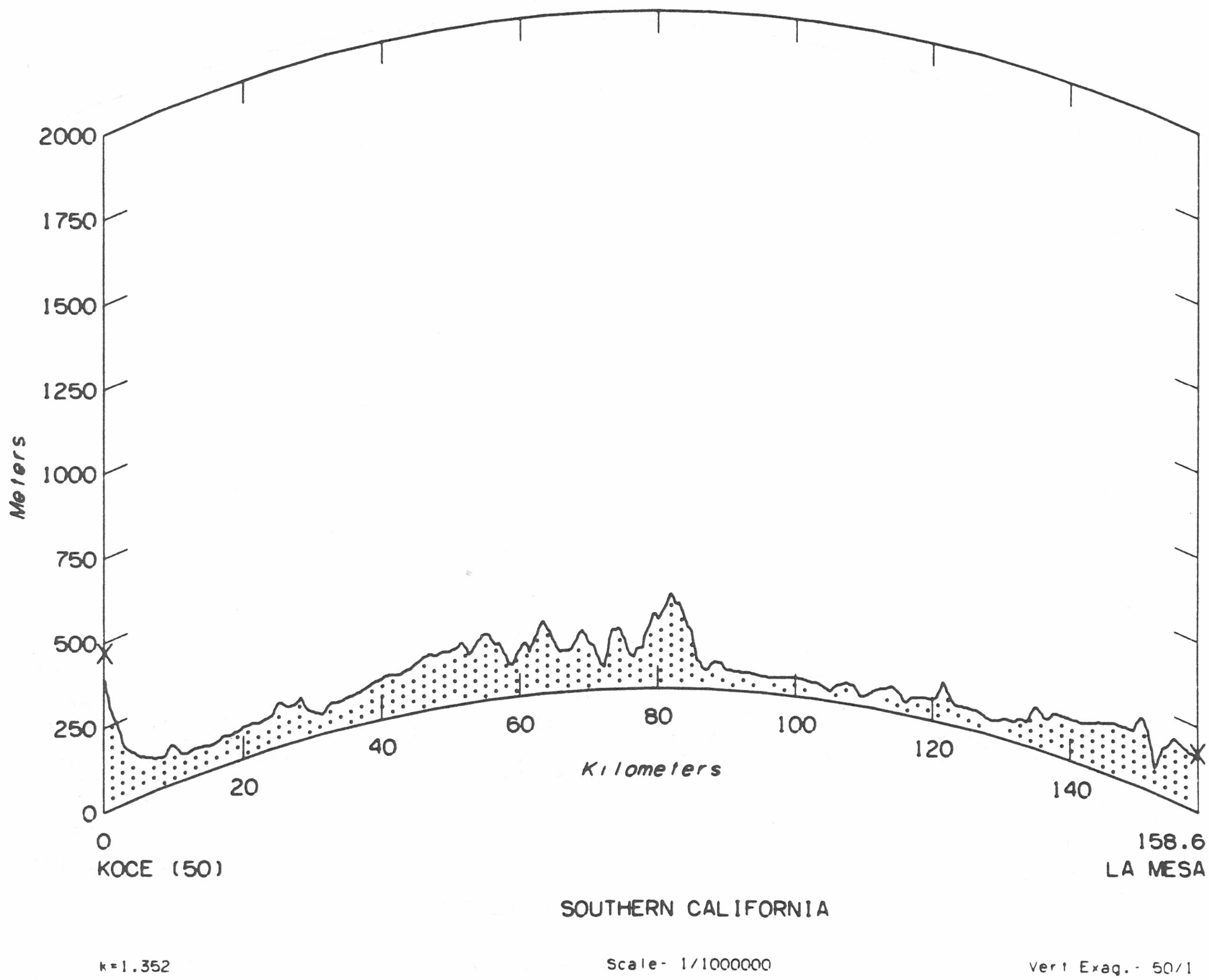

Figure 12. Terrain profile: KOCE(50) to La Mesa.

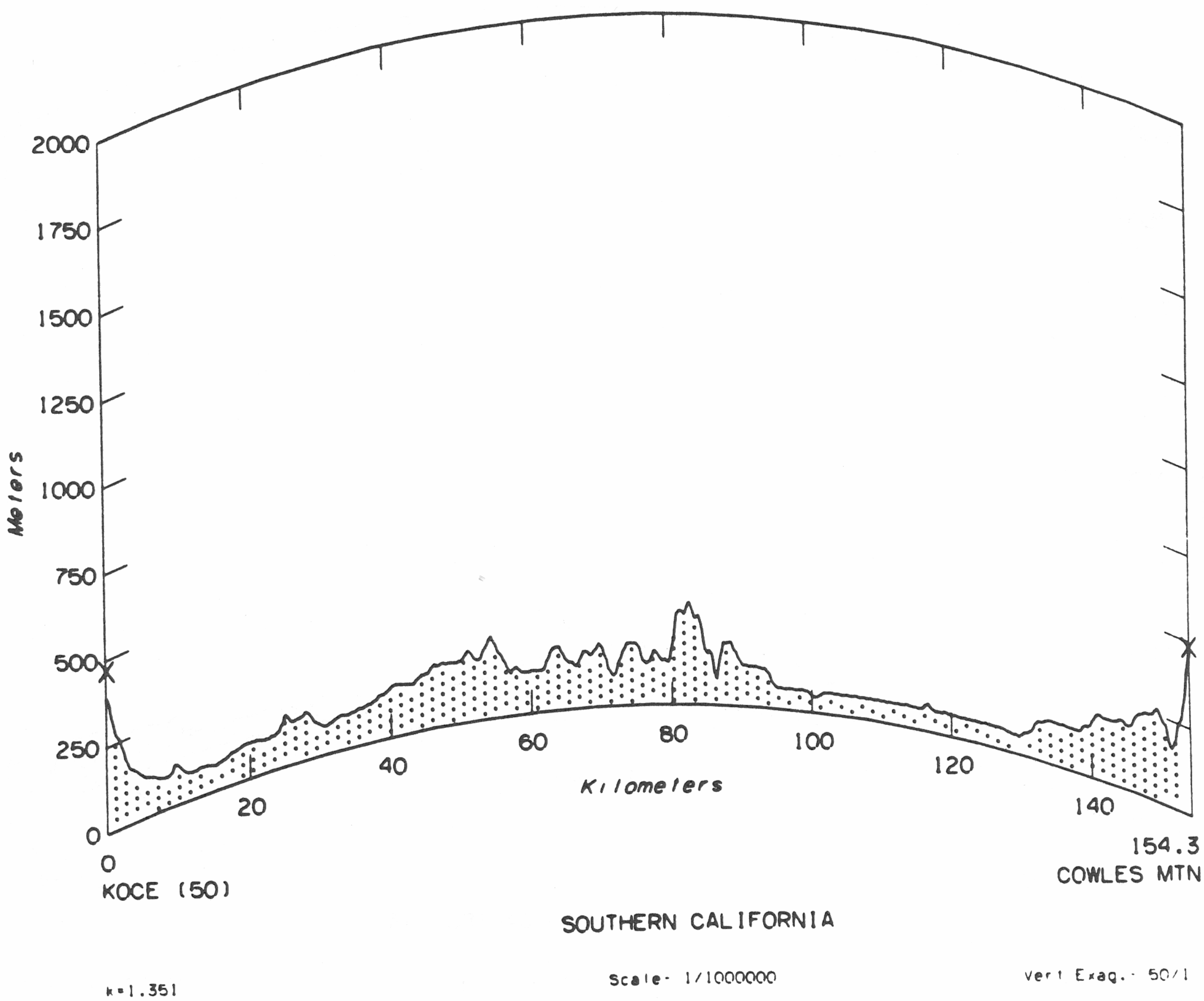

Figure 13. Terrain profile: KOCE(50) to Cowles Mountain.

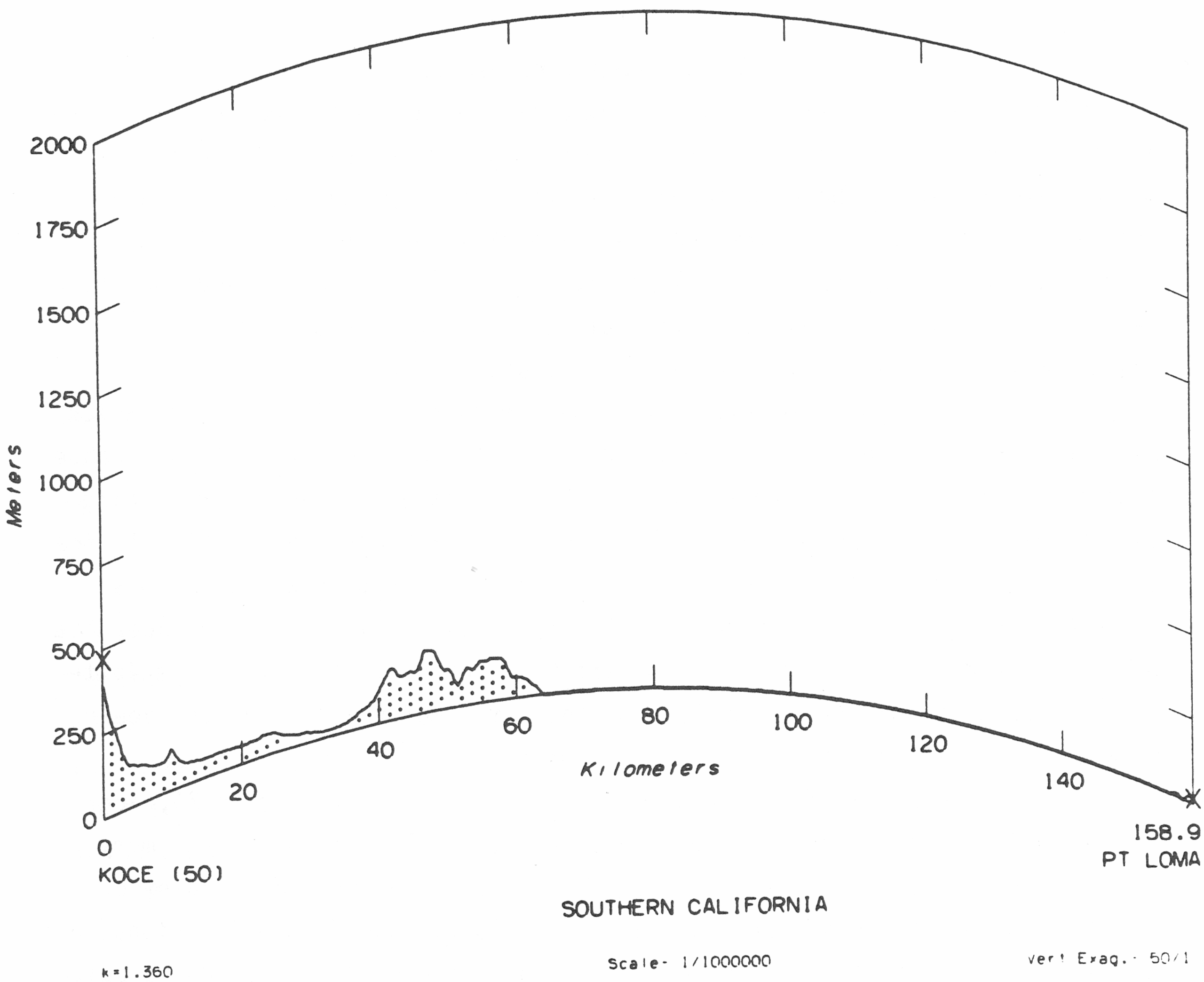

Figure 14. Terrain profile: KOCE(50) to Point Loma.

The terrain profile is shown in Figure 15. The path runs through the plains of eastern Colorado parallel to, but not far removed from, the Rocky Mountains. The peak in the middle of the path is one of the foothills that happens to intrude. The actual horizon for the receiver is a small hill about 9 km away.

3.3. First-Order Results

With the kind of measurements being obtained we would suppose that there are many sorts of analyses that might be usefully developed. As we pointed out before, however, the data are very spotty and of mixed quality so that analyses are difficult to make and when made they would be difficult to interpret. For example, the two seasonal extremes, in February and August, seem greatly underrepresented in the data and whether one should (or even could) make suitable allowances requires consideration.

We have chosen here to make only a simple first-order analysis in which we have lumped together into an individual statistical ensemble all available data for each path. In Figures 16 through 29 we have plotted the resulting cumulative distributions of the hourly medians of attenuation relative to free space. Included on those graphs are predictions given by the two methods described in Section 2.2. We have called them, but only for convenience, the ITM (as demonstrated in Figure 5) and the CCIR methods. Note that the latter tries to predict only for 1% or less of the time, and that is why it appears as a short segment on the left side of a graph.

Some of the predictions given here, such as the two in Figure 24, are remarkably accurate; some, such as those in Figure 27, are so-so; but many are very different from the measured data. We have, of course, the problem of spotty data and the uneven representation of diurnal and seasonal periods, and perhaps a more consistent and extensive set of data would have produced quite different measured curves. But more generally, we should not be surprised that prediction and data differ, for the environment here is far different from the "normal" environment envisaged by the models and, especially, the path parameters used here are often outside the professed ranges. For example, the CCIR method has been developed only for fairly high frequencies, and while we have therefore not attempted to use this method for the TV Channel 3 data in Figures 16 and 17, we have, to the contrary, struggled to extrapolate the curves back to frequencies for Channels 7 and 8.