
Appendix Jviii
Tennantry Farm, Rockbourne, Long Barrow (CfA site 236)
Draft topographic survey report text

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Appendix Jviii

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DRAFT TOPOGRAPHIC SURVEY REPORT TEXT – THOMAS CROMWELL, ENGLISH HERITAGE MARCH 2002¹.

BACKGROUND

Tennantry Farm Long Barrow (RSM 12096), located at Rockbourne in Hampshire (grid reference SU101221), was Scheduled in 1977 and subjected to a light agricultural regime² to aid its preservation. In an attempt to quantify the effects of the new regime the Central Excavation Unit began a series of annual topographic surveys in 1982 to establish a baseline model of the ground surface and then to monitor changes to the shape of the barrow over time. Surveys carried on until 1991, taking place each spring after the new crop was established. Recent interest in long-term erosion studies led to a new survey of the barrow in November 2001, which coincided with a geophysical survey that will be published separately. This report presents the topographic results, and assesses them against the earlier surveys.

AIMS

The survey was designed to capture the topography of the mound for comparison to the earlier surveys, and was also intended to provide repeatable Ordnance Survey coordinates for the grid so that future surveys could be exactly matched to the 2001 grid for greater analytical potential.

CONDITIONS

The weather was dry, and ground conditions were firm. The field was under crop, which had only just established itself, so the soil was clearly visible. The field regime appeared to be direct drilling of seeds³, so there were no plough marks or uneven patches to contend with.

METHODS

previous surveys

From 1982 to 1991, the surveys were all conducted with a grid of tapes and either a level or a theodolite to produce A1-sized sheets of drafting film with all the levels marked out at a scale

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² "Editor's Note: It is understood that from c 1982 this consisted of cultivating along the line of the barrow under a 10-year management agreement that has since lapsed (*The work of the Central Excavation Unit 1986-7*, English Heritage, 1987, p 19"

³ "Editor's Note: However, it is understood from other observations that this is not the general cultivation practice applied to the site "

of 1:100 on the page. These were all quoted with reference to a concrete temporary benchmark (TBM) that was set under the end of a hedgerow at the west entrance to the field, which was given an arbitrary elevation of zero. Contour plots were derived from the levels and were also inked up at 1:100 scale on drafting film. The archive does not contain any mention of reconstructable horizontal control points, so it appears that each year's grid was set out by eye. Indeed, they do not exactly coincide from year to year, and any attempt to overlay them requires an educated guess based on the shape of the mound.

2001 SURVEY

The topographic survey was conducted using Trimble GPS equipment, recording points at two-metre intervals on a 60m x 90m grid across the site. The grid was established with GPS as a set of 30m squares for the concurrent geophysics exercise, and was in-filled with tapes to create the 2m grid. Points were taken with the receiver mounted on a detail pole so that the pole could rest firmly on the ground for each point, and the pole had a flat tip to prevent it from sinking into the soil. Readings were triggered manually. The reading interval was determined by the use of a two-metre interval on all but one of the earlier surveys, in order to ensure comparison of similar data sets. As previous surveys had left no horizontal positioning information, the baseline for the 2001 surveys was chosen arbitrarily as the centreline of the visible mound. Vertical referencing was more secure, as the original temporary benchmark was relocated and recorded as part of the exercise. All of the data was captured digitally, and was output to AutoCAD for processing with Key Terra Firma software in order to generate ground models and contour plots.

RESULTS

The 2001 survey (fig XXX-1) clearly shows a linear earthwork roughly 60 metres long by 28 metres wide standing approximately one metre tall at its southern end, with shallow depressions running up the west and east sides. The northern end is also distinct, although it does not stand out as clearly as the southern end due to the upward slope of the field to the north and east. There appear to be two separate peaks along the ridge of the mound. The northern peak is at a higher elevation, and the southern slope of the southern peak has an area of exposed chalk fragments covering an area approximately 60 square metres in size. The mound profile is fairly shallow and rounded.

The 1982-1991 surveys show a gradual erosion of the top of the mound, with a corresponding filling of the ditches at either side (Wilson, 1991). Between 1982 and 1991 the maximum height (at the north end of the mound) dropped from 2.16m above TBM to 2.10m above TBM, with a corresponding loss of the 2.15m contour, and the reduction of the 2.00m contour from a single oval to two smaller ovals separated by a 2 metre gap. By 2001 this maximum height had dropped to 2.05m, and the 2.00m contour had been reduced to a single oval at the north end of the mound. The ditches on either side of the mound show a corresponding rise in contours, indicating the redistribution of material from the mound into the surrounding hollows. In 1991 Pete Wilson felt that there was more infilling to the south of the mound, representing general downhill movement of soil from the top of the mound. The amounts of deposition quoted from 1982-1991 (0.05-0.10m) are consistent with a comparison of the 1982 and 2001 data, suggesting that the rate of deposition around the base of the mound slowed down between 1991 and 2001. The rate of erosion at the top, however, appears to have been consistent over the two decades, suggesting that it can be projected forward to determine the likely state of the mound at any point in the future if the management regime is not changed.

Over all, the data suggest that the top of the mound is still eroding steadily even under the direct drilling regime, while there is less soil accumulating around the base. This might

represent the effects of soil compaction over the relatively soft ditches that masks any perceived accumulation of soil now that the field is no longer ploughed.

Figure XXX-2 shows a comparison of the 1982, 1988, 1991, and 2001 contour plots, plotted against the TBM set at zero elevation. Figures XXX-3a-c show a comparison of profiles through the mound from 1982, 1988, 1991, and 2001, with vertical scales exaggerated by a factor of 10, all aligned vertically.

FACTORS AFFECTING THE SURVEYS AND INTERPRETATIONS

The 2001 survey data, being gathered by GPS, are only accurate to 0.01m in horizontal and 0.02m in vertical planes. This tolerance is randomly distributed across the data, so the net effect on a dense survey grid is neutral. However, this tolerance affects single-point readings such as the TBM, which are crucial to comparisons with other data, making sub-centimetre height comparisons unreliable. Also, while the grid was laid out at two-metre intervals using tapes as guidelines for walking, the recorded eastings and northings of each data point are true coordinates that might not be exactly 2 metres apart.

The 1982-1991 surveys, conducted with levels and/or theodolites, have single-point tolerances of +/-0.005m in height, whereas the horizontal positions are arbitrarily recorded as the two-metre grid vertices. For each year's survey the grid itself is not recorded in reference to any other fixed features, so the exact position and orientation cannot now be reconstructed. Each grid appears to be based on a line through the centre of the mound as seen on the day, and it is clear from the data that the grids do not align perfectly from year to year. Also, some of the grids cover more ground than others. The net result is that profile comparisons are compromised by the need to manually rotate and align the surveys from each year to achieve a "best fit" of the contour models before choosing section lines. Interpretations regarding soil movement are therefore confined to those effects that appear beyond any doubt, while subtle apparent changes must be discarded as suspect. Finally, the lack of horizontal control means that the data cannot be interrogated for large-scale unidirectional horizontal movement trends that are expected on sloping sites.

It should also be borne in mind that the TBM is located at a field entrance, and there is anecdotal evidence that tractors and other farm equipment may have been run over it on occasion, so there is potential for height discrepancies from year to year. By the time of the 2001 survey, however, the hedge had engulfed the TBM, so it is unlikely to have been subjected to any further compression in recent years.

ACKNOWLEDGEMENTS

CfA would like to thank Mr McCleod of Tennyntrey Farms, Rockbourne, for allowing the surveys to take place, and for helping relocate the concrete TBM after a ten-year gap.

REFERENCES

Wilson, P, 1991 *Rockbourne, Tennyntrey Farm Long Barrow*, in *Archaeology in Hampshire*, Annual Report for 1990, Hampshire County Planning Department, ed. Michael Hughes.

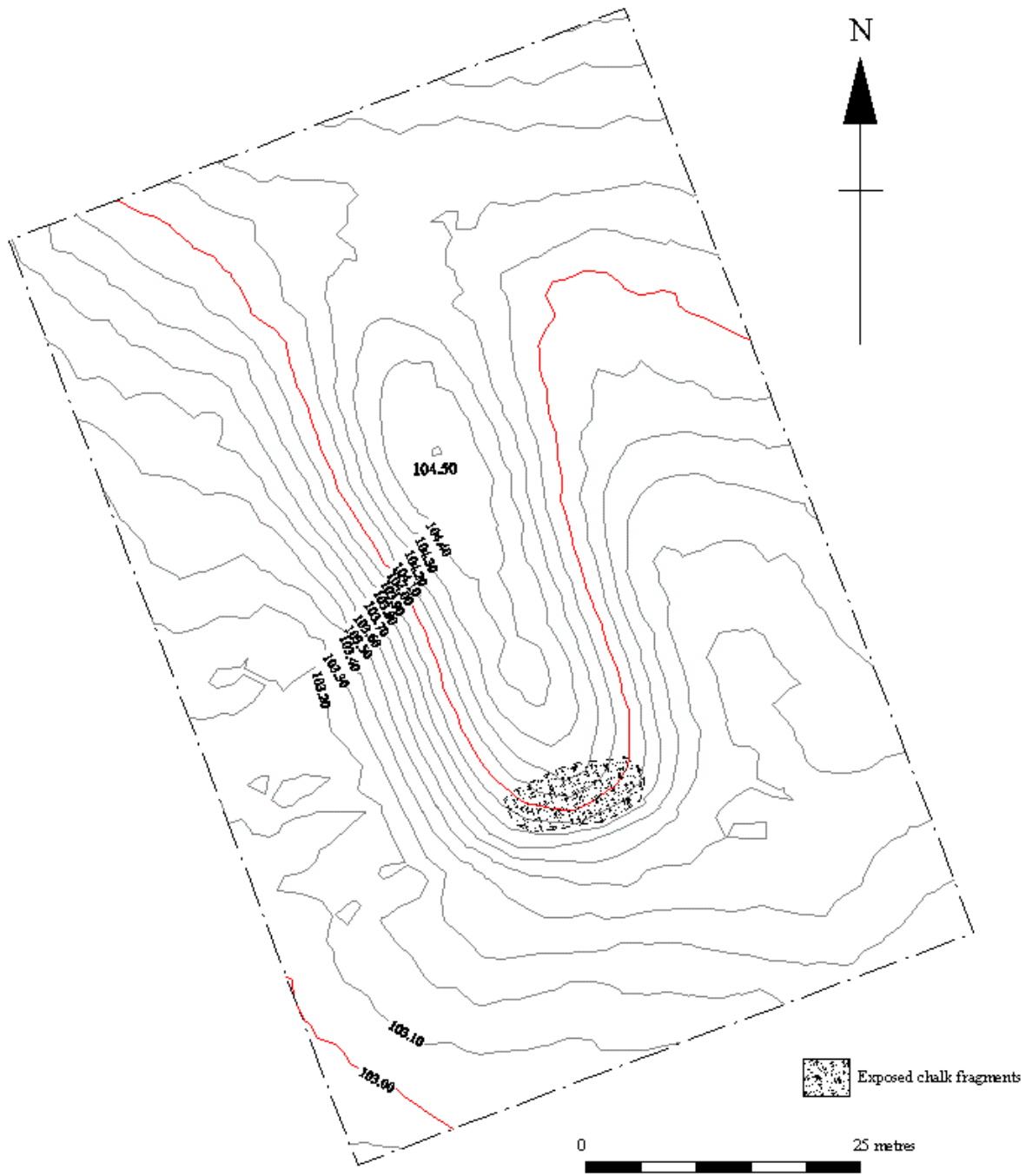
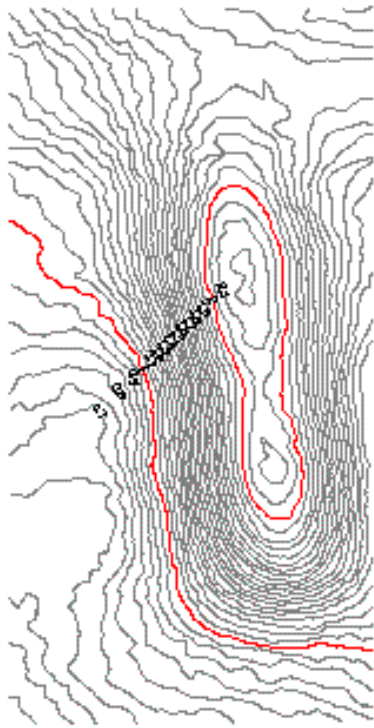


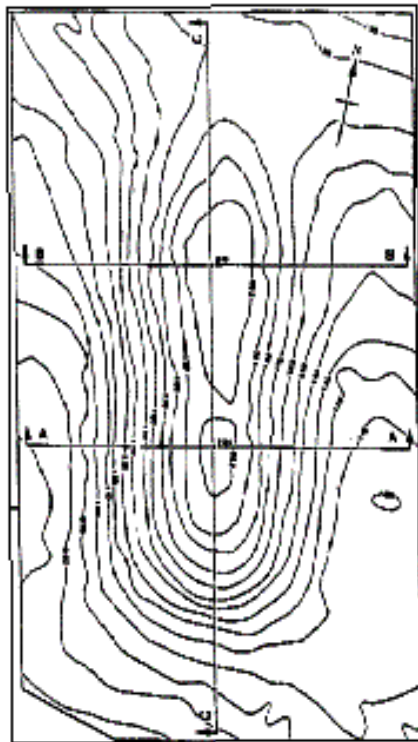
Fig XXX-1 Contour plot of 2001 survey data.



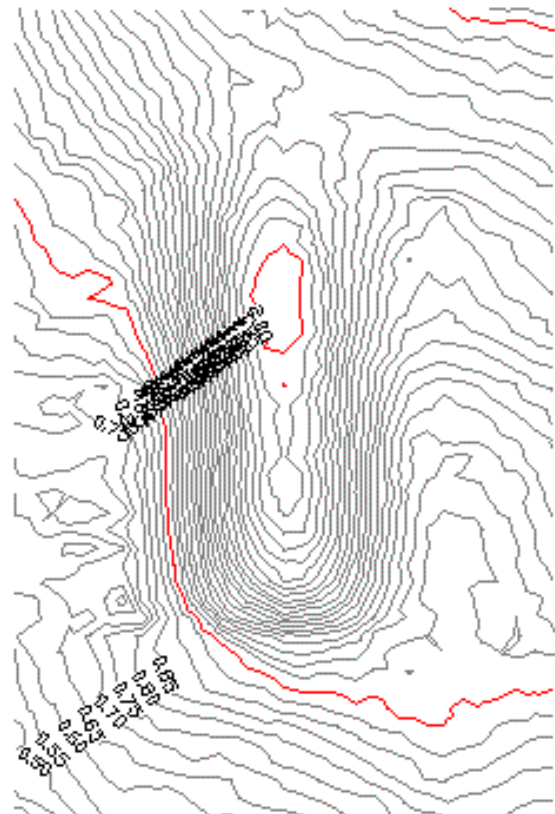
1982



1988

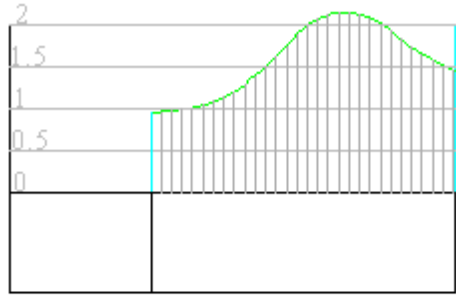


1991 (from Wilson 1991)

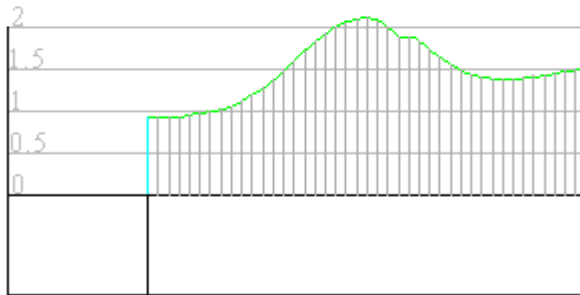


2001

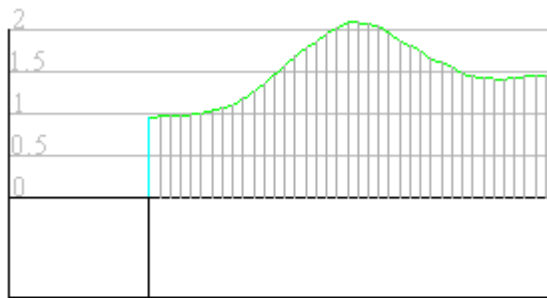
Fig XXXX-2 Comparative plots of topographic surveys, with elevations based on TBM at zero.



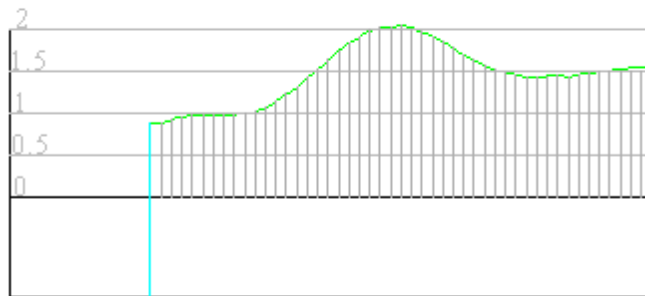
1982 section A-A



1988 section A-A

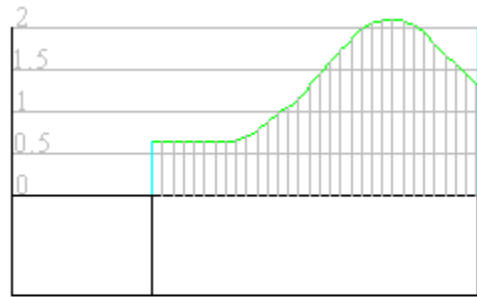


1991 section A-A

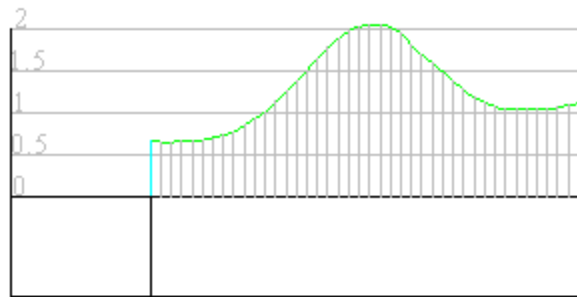


2001 section A-A

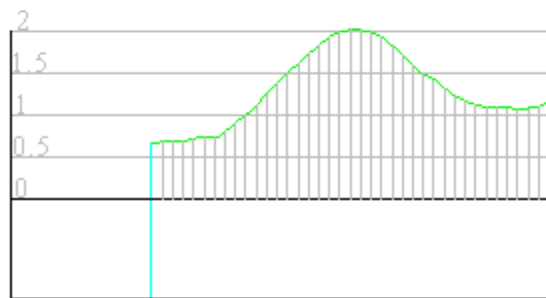
Fig XXX-3a Profiles through the mound at line A-A as marked on 1991 plot in fig XXX-2. Vertical scale exaggerated x10, with profiles aligned vertically for comparison.



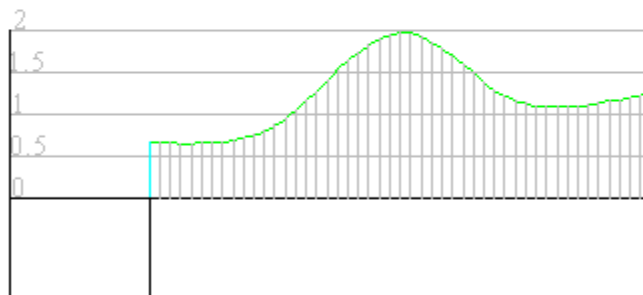
1982 section B-B



1988 section B-B

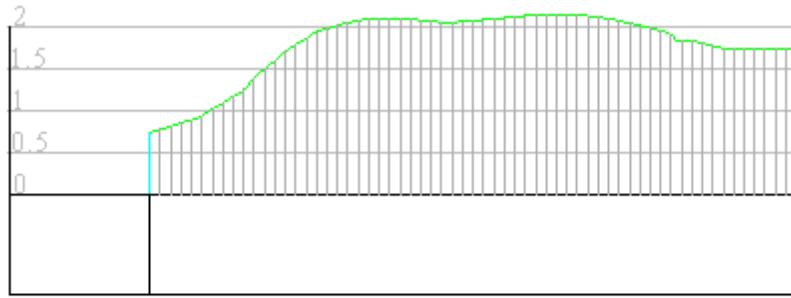


1991 section B-B

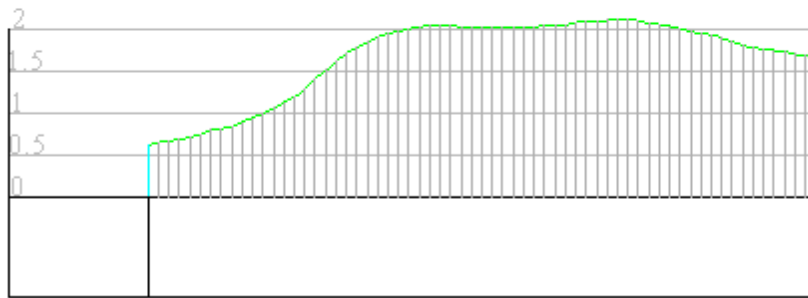


2001 section B-B

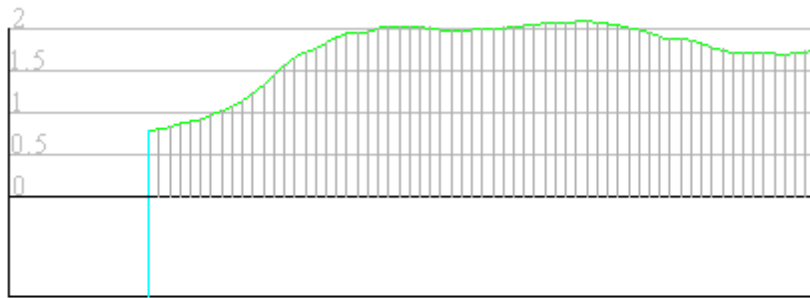
Fig XXX-3b Profiles through the mound at line B-B as marked on 1991 plot in fig XXX-2. Vertical scale exaggerated x10, with profiles aligned vertically for comparison.



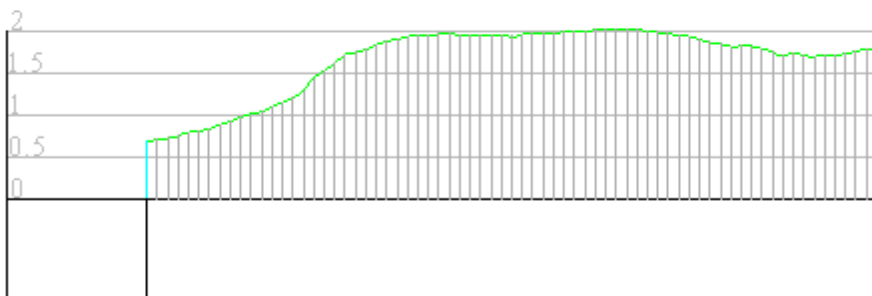
1982 section C-C



1988 section C-C



1991 section C-C



2001 section C-C

Fig XXX-3c Profiles through the mound at line C-C as marked on 1991 plot in fig XXX-2. Vertical scale exaggerated x10, with profiles aligned vertically for comparison.