RECENT RADIOCARBON DATING OF UPPER PALEOLITHIC SITES IN THE EASTERN MEDITERRANEAN: A REVIEW OF THE WORK AT OXFORD

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The importance of the eastern Mediterranean region for the later Paleolithic has been demonstrated by the series of early thermoluminescence (TL) dates for anatomically modern hominids reported from cave sites in the area (Valladas *et al* 1987, 1988). Recent accelerator mass spectrometry (AMS) ^{14}C dates from the 'Levantine Aurignacian' levels at Kebara Cave (Hedges *et al* 1990) have added to this story as have ^{14}C dates from similar and later (*ie*, 'Levantine Aurignacian' and 'Proto-Kebaran') horizons at Ksar 'Aqil (Mellars & Tixier 1989).

The intention of this paper is to review some of the recent AMS dating undertaken by the Oxford Laboratory on Late Upper Paleolithic and Epipaleolithic sites in the Levant, in particular from sites that belong to the 'Kebaran' and 'Natufian' industrial traditions. The dates to be mentioned are on charred bone, seeds and charcoal, and come from the follwing sites: 1) the Natufian levels at Hayonim (Cave and Terrace), Mt Carmel; 2) a number of Kebaran sites in the Jordan Valley (Ohalo II, Urkan-e-Rubb IIa and Fazael; 3) several Terminal Pleistocene sites in the western Negev; 4) a further set of dates on the Wadi el-Jilat complex of sites in Jordan. Finally, some mention will be made to the difficulty in obtaining archaeologically acceptable dates with such material.

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MODELING THE $\Delta^{14}C$ RESPONSE TO A COMPLEX SOLAR FORCING

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Spectral analysis of the high-precision $\Delta^{14}C$ calibration record indicates the $\Delta^{14}C$ variations may not be responses to several separate sinusoidal forcings, but may, in fact, represent a system of harmonics from a single complex solar variation. Such a solar variation would likely express itself with both variations in the solar magnetic field and in solar energy output. The former variation would affect ^{14}C production. The latter would undoubtedly have a climatic effect. After adapting the outcrop-diffusion model of Seigenthaler and Oeschger, we have used a computer software package (developed from "System Dynamics" as conceptualized by Jay W Forrester) to model the ^{14}C system's time-variant behavior. The model permits the behavior of each parameter of the cycle to be studied separately. Production and climate-sensitive model parameters were individually varied at the harmonic periodicities to test model sensitivity. These suite forcings were then compared to the spectral and statistical characteristics of the $\Delta^{14}C$, solar activity and climate time