year in which months are real months, but are chosen from different years from the whole period for which data are available. In practice [38], the months are chosen such that the monthly mean of the daily global irradiation on the horizontal represents an average value for all values contained in the database. For example, January of 1986 was chosen for the *TMY* of Madrid, because it had a value of $G_{dm}(0) = 1.98$ kWh/m^2, the closest to the average value of $G_{dm}(0) = 1.99$ kWh/m^2 for all the months of January on record [16].

The most widely used *TMY* for photovoltaic applications is set in a one-hour time scale. Hence, it contains 4380[1] values of global horizontal irradiation. Ambient temperature values are also specified for each hour. This huge number of initial data can lead to the impression that the corresponding results should be much more accurate than those obtained when simply using the 12 $G_{dm}(0)$ values as input. However, this impression is largely wrong. On the one hand, because the representativeness of any data – it should be again remembered – is limited by the random nature of the solar radiation, small differences in the results are scarcely meaningful. On the other hand, because the results obtained from the 12 $G_{dm}(0)$ values and from the *TMY* are very similar, provided the initial data are coherent (i.e. the monthly means in the *TMY* coincides with the 12 $G_{dm}(0)$ values) and that the selected correlations and diffuse radiation models to transpose from horizontal to inclined surfaces are the same. The physical reasons for this lie in the quasi-linear power-irradiance relationship in most PV devices, and in the fact, initially shown by Liu and Jordan [19], that the solar climate of a particular location can be well characterised by only the monthly mean daily clearness index. As already mentioned, they have demonstrated that, irrespective of latitude, the fractional time during which daily global radiation is equal to or less than a certain value depends only on this parameter. Surely, to go into this question in-depth would increase the reader's boredom which is probably already large enough; hence, we will restrict ourselves to describing a representative case from our own experience:

> In 1992, the Solar Energy Institute in the University of Madrid, IES-UPM, was involved in the design of the 1 MW PV plant in Toledo, Spain. It was the biggest European PV project at that time, so very careful studies were required at the initial project stage. Fortunately, a large historical database, containing 20 years of hourly irradiation data, was available from a nearby meteorological station, and was directly used to calculate the expected energy yields. Both static and sun-tracked photovoltaic arrays were analysed while taking into account detailed features such as shadowing from adjacent rows, back-tracking features and so on. Moreover, the same calculation was also performed using as input the *TMY*, previously derived from the historical radiation sequence, and also using as the only input the 12 $G_{dm}(0)$ values and computing for just the mean day of each month. The results from the three calculation procedures never differed more than 2%! As a matter of fact, the results were much more sensitive to the considerations of the solar angle of incidence effects [39] described below.

A clever friend, not involved in this project but being aware of this anecdote, posed the questions: Then why go into such exhaustive detail when they give similar results?

[1] There are 8760 hours per year, and the sun shines exactly half of the year in any location, hence there are 4380 hours of sunshine per year.