

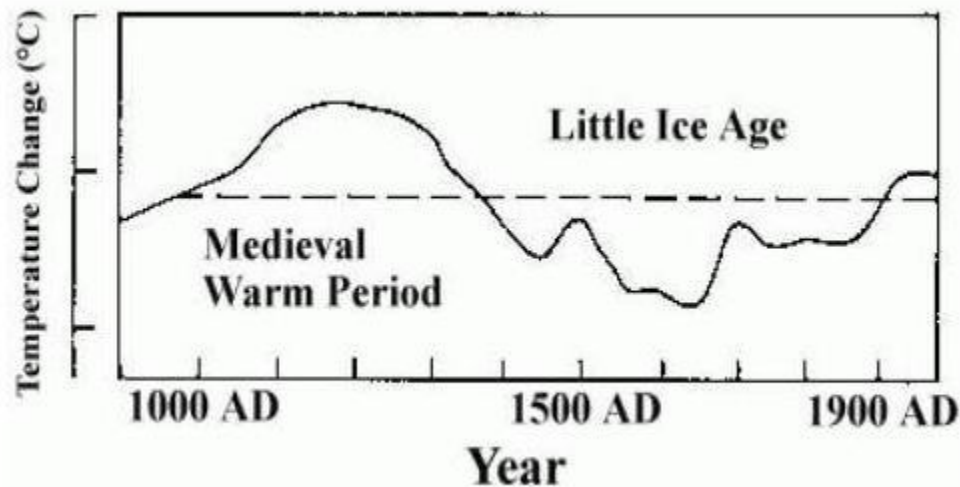
Notes, references and Appendix One

Notes;

Note 1; The correct definition of the LIA is described here by Dr Michael Mann

'The term Little Ice Age was originally coined by F Matthes in 1939 to describe the most recent 4000 year climatic interval (the Late Holocene) associated with a particularly dramatic series of mountain glacier advances and retreats, analogous to, though considerably more moderate than, the Pleistocene glacial fluctuations. This relatively prolonged period has now become known as the Neoglacial period.'

Note 2; The period from around 1350 to 1850 has popularly if incorrectly become known as the 'Little Ice Age' and this term is used in this paper. This perception of some 500 years of bitter cold has been further promulgated by the temperature graph used in the 1990 IPCC assessment. The LIA was more episodic than this, with some notably warm summers interspersed with some undoubtedly cold winters and other seasons. The dotted horizontal line in the figure below headed by the words 'Little Ice Age' perhaps gives a misleading impression of constant cold as several periods of warmth fall below it. Similarly the medieval warm period was probably more episodic than illustrated below. This is an early graphical representation with attendant difficulties in portraying the extremes of our climate accurately.



Figure; The 'global' record used in 1990 by the IPCC assessment.

The origins of the graphic shown above was described in 'The long slow thaw?'

References

'The Little Ice Age' by Professor Brian Fagan

'History and climate' edited by P D Jones

'Little Ice Ages Ancient and Modern vol 1 and 2' Jean Grove

'Climate history past and present' Hubert lamb

'Times of feast times of famine –a history of climate since the year 1000' E Le Roy Ladurie

'Paleoclimatology reconstructing climates of the quaternary' Raymond Bradley

'Little Ice Age Michael E Mann Volume 1, The Earth system: physical and chemical dimensions of global environmental change'

http://www.meteo.psu.edu/holocene/public_html/shared/articles/littleiceage.pdf

Many other studies of changing climate are referenced here

<http://wattsupwiththat.com/2011/11/01/a-short-anthology-of-changing-climate/>

and also;

<http://judithcurry.com/2011/12/01/the-long-slow-thaw/> which includes a separate section entitled 'supplementary information' noted under;

<http://curryja.files.wordpress.com/2011/12/long-slow-thaw-supplementary-information.pdf>

Appendix One-supplementary information concerning the temperature humps noted around 1540 and commencing 1610/15

*In his 1625 '*ideal garden sketch*' essay Francis Bacon wrote of the plants that could be grown in their season in the climate of London (then a small city of only 450,000 people)

“Latter Part of November, you must take such Things, as are Greene all Winter; Holly; Ivy; Bayes; Juniper; Cipresse Trees; Eugh; Pine-Apple-Trees; Firre-Trees; Rose-Mary; Lavander; Periwinkle, the White, the Purple, and the Blewe; Germander; Flagges; Orange-Trees; Limon-Trees; And Mirtles, if they be stooved; & Sweet Marjoram warme set. There followeth, for the latter Part of January, and February, the Mezerion Tree, which then blossomes; Crocus Vernus, both the Yellow, and the Gray; Prime-Roses; Anemones; The Early Tulippa; Hiacyntus Orientalis; Chamaïris; Frettellaria. For March, There come Violets, specially the Single Blew, which are the Earliest; The Yellow Daffadill; The Dazie; The Almond.”

http://en.wikisource.org/wiki/Of_Gardens/Of_Gardens

The similarity of seasons around 1625 is striking when compared to the modern warm period in the UK.

*More scientific confirmation of growing warmth is confirmed by Professor Dr C. Pfister the noted historian and geographer who identified Heat waves in 1525 and 1616 (roughly comparable or greater than Europe 2003)

*The compilation book '**Climate since AD 1500**' edited by Phil Jones and incorporating work by a number of scientists, notes the warm periods around 1630 and 1550 and the cold interval that separated them;

*In their summary in Chapter 33 of their book '**Climatic variations over the last 500 years**' P D Jones and R S Bradley in talking of regional evidence for Europe note; 'from the evidence presented –in the book- the climate since 1500 has varied between extremely warm and extremely cool decades.

'...from warm temperatures during some decades of the early 16th century conditions began to gradually cool during the second half of the century. 'Only a few short cool episodes lasting sometimes up to 30 years appear to have been synchronous on the hemispheric and global scale. These are the decades of the 1590-1610', the 1690-1710's, the 1800-1810's and the 1880's to 1900. Synchronous warm periods are less evident although the 1650's, 1730's, 1820's, the 1930's and 1940's appear to be the most important.'

*In Chapter 9 of this same book is documentary evidence from the USSR provided by P. Borisenkov who recorded a period of comparatively warm conditions in all seasons during the first half of the 16th century and noted that this was- according to Hubert Lamb- approximately the same as western Europe with climatic descriptions of the continent during the first half of the 16th century being in many respects similar to those during the first half of the 20th century. Borisenkov noted unusually hot dry weather in 1512, 25, 33, 41, 42, 61, 71 and 1585. In general he saw that the first half of the 16th century featured higher temperatures (notwithstanding some severe winters) than much of the 15th century but that the recurrence of climatic extrema during that period was quite high. Climatically the first two decades of the 16th century were especially favourable with the 1573 to 1582 decade the most favourable and from 1583 on extremes again.

*Elsewhere in Europe in chapters contained in **Climatic variations over the last 500 years**' Ogilvie writing about Iceland remarked about the mild decades of the 1570's and the 1640's 1650's and 1660's and the early 1700's with the 1570's appearing to be the mildest. The 1560's were mainly cold. The 1610's appear mild on the whole. A distinct mild period occurred from 1641 to 1670 which coincided with the period of least

ice in the 17th century from 1631 to 1681. The last decade of the 17th century was extremely cold. The decade 1701 to 1710 was the mildest of the entire 18th century.

(It must be noted that most, but not all, of the warm or cool periods noted elsewhere in Europe were synchronous with Britain, but even today there is no uniform synchronicity.)

Tony Brown; Climate Changes June 2013