March,2019

Summary of WEADAC and WEADAC DLC

1．WEADAC creates 24 hours weather data for typical day of every month (Jan. -Dec.) and coldest/hottest months based on the monthly statistical weather data at the location the user select. The created weather data are expected to be used for air conditioning load calculation. Number of locations included in WEADAC is more than 3,700. National mean time is adopted as the time system.

2．WEADAC always creates hourly weather data from coldest/hottest months even if cooling or heating is not necessary at the location. If one of them are not necessary, the user is recommended to neglect it.

3．WEADAC cites the monthly statistical weather data as source data from the following references. However, WEADAC does not output the source data.

（Ref.1） Monthly statistical weather data of the temperature, relative humidity and precipitation are cited from "Tables of temperature, relative humidity, precipitation and sunshine for the world, Meteorological Office, PartI-VI, Her Majesty's Stationary Office, London, -1980".

（Ref.2） Japan Meteorological Agency (JMA) computed monthly statistical weather data of the temperature, relative humidity, precipitation, wind direction/speed, and cloud amount, based on the weather reports from various locations over the world. We used these data stored in the magnetic tape from January 1982 to October 1988 under the permission of JMA.

（Ref.3） Monthly statistical solar radiations at 641 locations (measured), at 255 locations (estimated from monthly sunshine) and at 65 locations (sunshine only) are cited from " George O. G. Lof, John A. Duffie, and Clayton O. Smith: World distribution of solar radiation, College of Engineering, The University of Wisconsin, Engineering Experiment Station, Report No.21, July, 1966".

4．The source files named BMO and JMA are created from Ref.1, Ref.2 and Ref.3 by the following procedure,

(1) All the missing weather data in Ref.1 and Ref.2 are completed,

(2) As wind direction, wind speed and cloud amount are not included in Ref.1, they are supplemented from those of neighboring locations in Ref.2, considering the distance of the locations,

(3) Solar radiation is supplemented to Ref.1 and Ref.2 with those of neighboring locations in Ref.3, considering the distance of the locations.

(4) Solar radiation for design cooling and design heating month are estimated by the method in (Ref.4) Part2.

5．The following papers describe the methods to estimate hourly weather data from the monthly statistical weather data in BMO and JMA.

(Ref.4)　Hiroshi AKASAKA, Yoshinobu ARAI and Soichiro KUROKI, Weather data compilation for design and average load calculation at any location in the world, SHASE, Japan (in Japanese)

Part 1 - Compilation of monthly weather data files including more than 3700 stations in the world, No.45, Feb.,1991

Part 2 - Estimation methods of hourly weather values based on monthly data, No.54, Feb., 1994

6．The computer program DLC can read directly the text file outputted from WEADAC and compute design heating and cooling loads of the coldest/hottest months.