

ANNEX II. THE WORLD'S GREATEST KNOWN RAINFALLS

World-record and near-record rainfalls are listed in Table A.2.1 and Table A.2.2, respectively. The relation between values and durations in Table A.2.1 is illustrated in Figure A.2.1, and an enveloping curve equation is given as follows (Wang G. and others, 2006):

$$R = 491 D^{0.452}$$

where the rainfall, R , is measured in mm and the duration, D , is measured in hours.

Extreme rainfalls in Tables A.2.1 and Table A.2.2 may be used to decide the general level of PMP in certain places. Nonetheless, these values contain only a few storm types and special geographic and topographic conditions, so their applicability is limited. Values with durations ranging from 12 hours to 2 years in Table A.2.1 come from tropical storms in La Réunion in the Indian Ocean and Cherrapunji in India. Typhoons, or what are called cyclones in La Réunion, run across steep mountains more than 3 000 m high and lead to favourable precipitation conditions. Cherrapunji is located on the southern side of Qinghai–Tibet Plateau and on the northern side of the Brahmaputra alluvial plain. Abundant moisture from the Bay of Bengal results in the formation of extraordinary storms with long durations. Table A.2.1 and Table A.2.2 list

near-record rainfalls in Taiwan Province of China, Jamaica and the Philippines, all of which are islands.

Most rainfalls with durations shorter than 12 hours in Table A.2.1 and Table A.2.2 are caused by typhoons (hurricanes) or strong local convection (thunderstorms).

Since the values listed are mostly from tropical storms, they should not be used as indicators of PMP magnitude in regions not prone to such storms. Obviously, small-area PMP in cold climates or over basins well protected by orographic barriers and located far enough from their coasts so as not to be affected by spillover will fall considerably below the values listed in these two tables.

Table A.2.3 shows the maximum observed depth–area–duration data for China, the United States of America and India. Table A.2.4.1 shows the maximum and near-record known depth–area–duration data for southern and northern China. Table A.2.4.2 shows depth–area–duration data of long-duration and large-area extraordinary storms in China. Table A.2.5 shows the maximum observed depth–area–duration data for the United States. Table A.2.6 shows the maximum observed depth–area–duration data for India.