Development of Global Heatwave Risk Alert

Hon Yin YEUNG  Chun Kit HO  Sui Shing YEA (The Chinese University of Hong Kong)

Methodology

- Forecast (ECMWF EPS)
  - T distribution
  - Calculate Prob (EHI)
  - Calculate 
  - Heatwave Impact Analysis
- Reanalysis (ERAS/ERA40)
  - T climate
  - Calculate heatwave severity as EHI
  - Probability of EHI
- Impact (EM-DAT) [1]
  - mortality
  - Severity-Impact correlation
  - Risk maps
  - Heatwave Risk Alert

EHI refers to Excess Heat Index [2].

\[ EHI = (T_i + T_{i+1} + T_{i+2})/3 - T_{ref} \]

T<sub>i</sub> is the daily mean temperature and T<sub>ref</sub> is the 95th percentile of T<sub>i</sub> adjusted for seasonality.

Example of EHI Analysis

- T<sub>ref</sub> for 31<sup>st</sup> Jan
- T<sub>ref</sub> for 31<sup>st</sup> Jul

6-8 Aug 2003 Excess Heat Index

16-18 Jul 2006 Excess Heat Index

Example of Heatwave Probability Maps (6-8 Aug 2003)

- Probability of EHI > 0°C
- Probability of EHI > 3°C
- Probability of EHI > 6°C
- Probability of EHI > 9°C

Base time: 00Z, 5 Aug 2003

Example of Heatwave Risk Alert

Maximum Heatwave Risk

Valid time: 5-14 Aug 2003

Death toll of 2003 European Heatwave

Base time: 00Z, 5 Aug 2003

Future Plan

- Develop real-time risk product
- Validate / verify Heatwave Risk Alert
- Develop impact database

References