

## CLIMATE EXTREMES AND PREGNANCY LENGTH

**Payam Dadvand**, *Centre for Research in Environmental Epidemiology (CREAL), Spain*

**Xavier Basagaña**, *Centre for Research in Environmental Epidemiology (CREAL), Spain*

**Claudio Sartini**, *Centre for Research in Environmental Epidemiology (CREAL), Spain*

**Francesc Figueras**, *University of Barcelona, Spain*

**Martine Vrijheid**, *Centre for Research in Environmental Epidemiology (CREAL), Spain*

**Audrey de Nazelle**, *Centre for Research in Environmental Epidemiology (CREAL), Spain*

**Jordi Sunyer**, *Centre for Research in Environmental Epidemiology (CREAL), Spain*

**Mark J. Nieuwenhuijsen**, *Centre for Research in Environmental Epidemiology (CREAL), Spain*

**Background and Aims:** Although future climate is predicted to have more extreme heat conditions, the available evidence on the impact of these conditions on pregnancy is very scarce and inconclusive. This study was aimed to investigate the impact of maternal short-term exposure to extreme ambient heat on the length of pregnancy.

**Methods:** This study was based on a cohort of births (N=7587) that occurred in a major university hospital in Barcelona during 2001-2005. Three indicators of extreme heat conditions were applied, two based on one day exposure to an unusually high (more than 95<sup>th</sup> and 99<sup>th</sup> percentiles of long-term average for the same day) heat-humidity index (perceived temperature) and one based on exposure to unusually hot temperatures persisting for a five-day period. Each mother was assigned the measures made by the closest (aerial distance) of three meteorological stations across the region (101 km<sup>2</sup>). A two-stage analysis approach was developed with the first stage separating the monthly trend in gestational age for the study region as a whole from within-region personal variation and the second stage quantifying the risk using a range of covariates together with the predicted regional monthly trend by the first stage model as an offset. The second step was repeated for lags zero (delivery date) to six days.

**Results:** We detected a five-day (95% confidence interval of 0.5-10.1 days) reduction in gestational age at delivery after maternal lag 1 exposure to unusually high (99<sup>th</sup> percentile) heat-humidity index. The result for the indicator of persistent heat was not conclusive because of the small number of exposed subjects.

**Conclusions:** Maternal exposure to extreme heat episodes results in a reduction in gestational age at delivery in lag1 exposure, suggesting an immediate effect of this exposure on pregnant women. Further studies are required to confirm our findings in different settings.