Reviewer's report

Title: Associations between climate variability, unemployment and suicide in Australia: a multicity study

Version: 2
Date: 3 February 2015
Reviewer: nicole praschak-rieder

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Major Compulsory Revisions

1) In most temperate areas of the world, there is a seasonal component in unemployment rates. Usually, seasonality in unemployment rates is to a great extent caused by meteorological changes, and seasonality in unemployment rates and the meteorological situation are inter-correlated (e.g. reduced construction activity in winter etc.). Does unemployment vary seasonally in the investigated areas, and if yes, how did the authors deal with this problem?

3) Possible inter-correlations between unemployment rates and meteorological variables should be indicated.

2) How were monthly sunshine hours measured? Why did the authors calculate the changes in monthly temperature, but not the changes in amount of monthly sunshine hours or other meteorological variables?

4) Methods, page 4: how was ‘seasonal adjustment’ done? Were data differentiated for seasonal variation in suicide rates and seasonal variation in temperature and delta temperature?

Minor essential revisions.

Introduction, page 3: The authors state, that recent studies have found that meteorological factors are associated with suicide risk. This phenomenon has been repeatedly described since the nineteenth century. Please cite the respective literature (like Durkheim etc.).

Introduction, page 4, line 81. ‘extend’ should read ‘extent’

An important citation is missing. Vyssoki et al.: Direct effect of sunshine on suicide, JAMA Psychiatry 2014. Please discuss your findings in the light of findings of the Vyssoki et al. study.

Other papers are incorrectly cited, e.g. studies by Lambert et al. and Praschak-Rieder et al. measured more specific parameters of serotonin
metabolism suggesting that extracellular serotonin is low (and not high) during winter.

Discussion, line 174ff: 'lower levels in the action of serotonin in human body associated with increased temperature'. I don’t know what the authors intended to say here. Please explain.

Line 206 ff ‘The seasonal pattern of sunshine hours is similar as Melbourne and its association with suicide is also similar as that in Melbourne’. This sentence makes no sense. Please rephrase

Figure 2: Mortality rates : Please indicate exactly what the units on the x-axis are.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

i declare that I have no competing interests.