Letters

The atmospheric tide in Devon

I was intrigued by Frank Le Blancq's recent article on diurnal surface pressure variation (Le Blancq, 2011) and it raised a question in my mind. Do the radiationally forced maxima and minima really occur at approximately the same time of day throughout the year at mid-latitudes, given the very large variation in sunrise and sunset times?

I have a low-cost weather station that has been exporting 12-minute data, including atmospheric pressure, into a spreadsheet over the last 30 months or so. I was sufficiently intrigued to use that data to try to answer my question, at least for Devon where I live.

I averaged the pressure at each time of the day over each month from June 2009 to September 2011 and looked at the differences from that month's average. My assumption was that this would remove the non time-dependent meteorologically forced changes and leave any time-dependent signal, such as radiationally-forced changes.

Figure 1 plots the differences found at 0.25 millibar intervals, with the diurnal cycle going down the page and the monthly variation of that diurnal variation from June 2009 to September 2011 going across the page. Times of sunrise and sunset are also marked.

Although care needs to be taken with trying to draw too many inferences from what was a 'cheap and cheerful' exercise, the coherence of the signal is striking, as is its orientation with sunrise and sunset times as they vary during the year. The results seem to suggest the following for the average atmospheric tide in Devon.

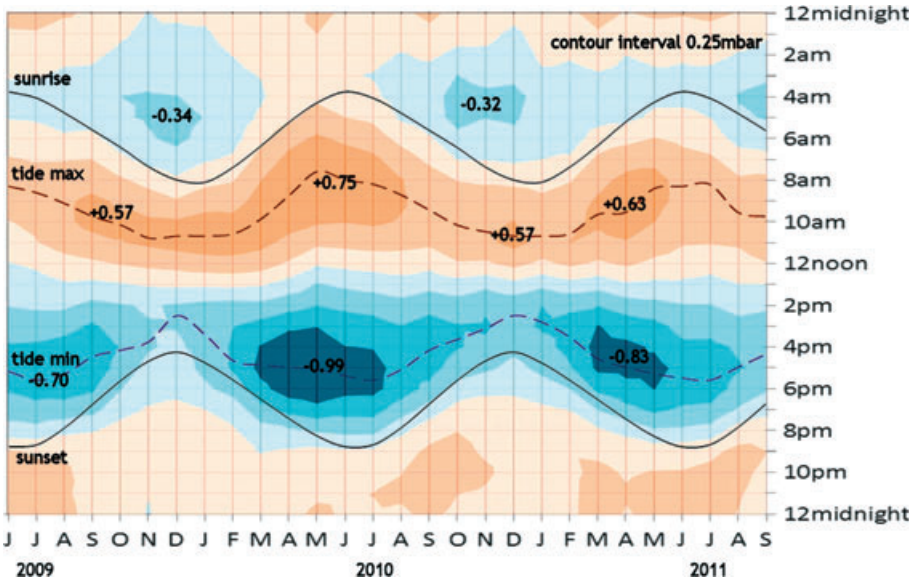

Figure 1. Monthly average atmospheric tide at Ottery St Mary (Devon).

- There is a clear semidiurnal pressure oscillation
- The daytime oscillation shows a significantly larger amplitude than the nighttime oscillation
- The amplitude of the daytime oscillation varies between a maximum of between 1.5 and 2.0 millibars in May to a minimum of around 1.0 millibar in December
- The morning maximum occurs three to four hours after sunrise, varying from around 8am in summer to around 11am in winter
- The afternoon minimum occurs one to two hours before sunset, varying from between around 5.30pm in summer and 2.30pm in winter

This contrasts with the Le Blancq finding of little seasonal variation of the atmospheric tide for Jersey. I would be extremely interested in seeing similar analyses for other mid-latitude locations to help judge the significance of my initial findings for Devon.

Reference

Le Blancq F. 2011. Diurnal pressure variation: the atmospheric tide. *Weather* **66**: 306–307.

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Ottery St Mary, Devon

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Weather and music

My congratulations to Karen Aplin and Paul Williams (2011) on their lovely and readable article. I would point out, though, that Vaughan Williams titled his music *Sinfonia Antartica* (actually in response to his film score used in *Scott of the Antarctic*). The symphony title does not include the letter 'c' – I have no idea why. [*This is the Italian spelling* – Letters Editor.] The organ passage used in *Sinfonia Antartica* is designed to depict the massive and insurmountable appearance of the Beardmore Glacier which Scott and his party had to traverse. It does not actually represent a weather condition.

Vaughan Williams also wrote *A Sea Symphony* which is full of references to wind and sea conditions, although it is, of course, a choral work.

One further thought regarding this excellent article: the authors assert that no UK composer has written a musical description of a thunderstorm - well, Purcell did just that in his opera *Dido and Aeneas* (c. 1689), where he depicts a sudden storm with rain and lightning. The storm effect is achieved with a string orchestra - not a drum roll anywhere!

John L. Winterton
Lightwater, Surrey

Response from Karen Aplin and Paul Williams

We thank John Winterton for his encouraging and thoughtful comments and for his suggested additions to our musical database. We apologise for our typographical error in the spelling of *Sinfonia Antartica*. However, we did not claim that the organ passage in this piece represents a weather condition: the only instrumentation specifically linked to weather in *Sinfonia Antartica* is the unambiguous use of the wind machine.

All the pieces analysed in our paper were subject to our initial restriction to exclude vocal music, for the reasons we discussed. It was strictly in this context that we asserted that *no well-known composer from these islands* (the UK) *has dealt with a thunderstorm to our knowledge*. We excluded the thunderstorm in Purcell's opera *Dido and Aeneas* because it occurs during a sung passage rather than an orchestral interlude. The storm occurs in Act II, Scene II (*The Grove*). According to the libretto, in Part XXVI Dido sings *The skies are clouded, hark! how thunder/Rends the mountain oaks a sunder* and in Part XXVII

Belinda sings *Haste, haste to town, this open field/No shelter from the storm can yield.*

There are, of course, numerous other examples of weather appearing in vocal music, which could easily provide enough material for another article. We welcome further correspondence through these pages.

Reference

Aplin KL, Williams PD. 2011. Meteorological phenomena in Western classical orchestral music. *Weather* **66**: 300–306.

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Book reviews

Climatological Averages for 1981–2010 and 2001–2010

Stephen Burt and Roger Brugge
Climatological Observers Link (COL), 2011

Paperback £25 (£15 for COL members)
434 pp
ISBN 978-0-9569485-0-2

Copies may be obtained from The Editor, Climatological Observers Link, 16 Wootton Way, Maidenhead, SL6 4QU
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Back in the mid twentieth century – until the 1970s – before global warming concerns emerged into the public consciousness, the Met Office regularly published booklets of climatological averages for the UK. Since then, the internet has provided a profusion of climatic data, much of it being of unknown authority and reliability. Although selected data is available from the Met Office website, this new publication from COL is the first source of UK climatic averages for 1981–2010. As such, it is a fine testament not only to the dedication of the hundreds of voluntary weather observers who belong to COL, but also to the rigour and determination of the authors. This substantial book consists of averages from 127 sites having a complete coverage for the 30-year period, 101 sites with estimated averages for this period and 244 sites having averages for the final ten years. This distinction provides some fascinating comparisons. Many places were a little warmer and wetter in the last decade, but it is interesting to see how often the lowest minimum temperatures of the whole 30 years occurred in the last two winters. It may be invidious to name individual sites but it is noteworthy that at Wirksworth (Derbyshire), the lowest temperature of all months was recorded in November 2010. A particularly welcome feature of many of the well-presented data tables is one for lowest maximum and highest minimum temperature of each month, as well as the more ubiquitous highest maximum and lowest minimum. Both this and the all-important metadata supplied for most sites highlight the remarkable detail contained within this volume. Overall, a superb achievement by contributing members of COL and especially the authors who painstakingly compiled the data.

Julian Mayes, MeteoGroupUK

Global Warming – Understanding the Forecast

David Archer

John Wiley & Sons, November 2011

Paperback £32.99
207 pp
ISBN 978-0-470-94341-0

On the back of this slim volume, it is stated that it is a *comprehensive introduction to all aspects of global warming*. Indeed it is! The author is a computational ocean scientist at the University of Chicago and, in a clear, well-written style, he has compiled what is intended as a course book for undergraduate non-science students. A pleasing result of aiming this book at a non-science audience is that most of the concepts are explained from first principles. Nevertheless, as would be expected from a text book, the material does require close examination; it is certainly not a book to be romped through in one sitting – as your reviewer discovered! No, the subject matter needs more attention than that, and it also includes study questions and exercises. But if you only have space on your bookshelves for one up-to-date analysis of global warming then, I suggest, this is it. No doubt, after a decade has passed this subject will have grown enormously, requiring the purchase of the current edition at that time. This is in itself a second edition, and I assume that any typos have been corrected – I certainly did not notice any. In the American style, it is printed on thin, yet strong, paper, but with a minimum of 'show-through' from the text on the next page. The result is a total of 207 pages with a book size of 8 × 10 inches (about 20 × 25 cm). The companion website provides programs for interactive computer models for the physics and chemistry behind global warming. Solutions are available to instructors on the third website (only available to instructors after approval by the publishers). Useful websites are:
http://geoflop.uchicago.edu/forecast/docs/reviews.html
http://bcs.wiley.com/he-bcs/Books?action=index&bcsId=4871&itemId=1405140399
http://eu.wiley.com/WileyCDA/WileyTitle/productCd-EHEP002091.html

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